

Tippecanoe Environmental Park
Land Management Plan
FCT Project # 92-012-P2A

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Prepared for
Florida Communities Trust and
Florida Fish and Wildlife Conservation Commission

by
Charlotte County
Community Services Department

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Abbreviations and Acronyms

ATV	All-terrain vehicle
CHEC	Charlotte Harbor Environmental Center
DEP	Florida Department of Environmental Protection
DNR	Florida Department of Natural Resources
DOF	Fl. Dep. of Agri, And Consumer Svc. Div. of Forestry
FNAI	Fl. Natural Areas Inventory
FWC	Fl. Fish and Wildlife Conservation Commission
HCP	Habitat Conservation Plan
MP	Management Plan
Natural Resources	Charlotte County Natural Resources Division
SWFWMD	SWFL Water Management District
USGS	United States Geologic Survey
USFWS	United States Fish and Wildlife Service

1.0 INTRODUCTION

Tippecanoe Environmental Park is a 354-acre environmental park located in north central Charlotte County, directly south of the Charlotte Sports Park (**Exhibit A**). The park is bordered by the Charlotte Sport's Park and SR 776 to the North, by the Charlotte Harbor Preserve State Park to the west and southeast and by Tippecanoe II Mitigation to the east. Tippecanoe is in Township 40 South, Range 21 East, Sections 13, 14, 22, and 23 of USGS Quadrangle El Jobean.

Tippecanoe Environmental Park is comprised of several different vegetation communities (habitat types). Periodic fires, both prescribed burns and wildfires, have helped to maintain the conditions of the habitats onsite for a variety of species, including listed species (endangered or threatened species). The majority of the site is dominated by pine flatwoods, scrub, scrubby flatwoods and tidal marsh. Listed species such as the Florida scrub-jay (*Aphelocoma coerulescens*), eastern indigo snake (*Drymarchon corais*), gopher tortoise (*Gopherus polyphemus*), gopher frog (*Rana capito*), and Florida mouse (*Podomys floridanus*), have been observed within the park. Other listed species such as the southeastern American kestrel (*Falco sparverius paulus*), Sherman's short-tailed shrew (*Blarina carolonensis shermani*) and Florida pine snake (*Pituophis melanoleucus mugitus*), have the potential to be present.

The park is located adjacent to and contains waters that are part of the Gasparilla Sound-Charlotte Harbor Aquatic Preserve. Tippecanoe is surrounded on 3 sides by publicly owned property (**Exhibit C**). The west and southeast portions of the site are boarded by the Charlotte Harbor Preserve State Park. To the east, separated by a canal, is Tippecanoe II (FCT project # 01-063-FF1), a 182-acre scrub-jay mitigation preserve. Along the north boundary is SR 776 and the Charlotte Sport's Park, which is home to the Tampa Bay Rays spring training. There is limited but undeveloped urban interface along the northeast boundary of the park. The land use activities in the surrounding areas and land use adjacent to the park associated with the Tampa Bay Rays spring training should not inhibit management of the site. Planning and provisions are made during prescribed burning to avoid directing smoke toward the sports park and the road.

Tippecanoe Environmental Park was acquired with grant funding from Florida Communities Trust. Charlotte County provided a 50% match from ad valorem funds; there are no additional restrictions that these funds have on the use of the property. Literature and advertising identify that Tippecanoe was acquired with funds from the Florida Communities Trust. This Management Plan outlines the management activities

for the park and was developed to ensure that Tippecanoe will be developed and managed in accordance with the Grant Award Agreement (**Appendix C**). Key management strategies include prescribed burns and exotic/invasive species removal. Tippecanoe is open to the public. Trails facilitate public enjoyment of this site; regularly scheduled tours are available for the public. Only passive use recreation (e.g. hiking, bird watching, etc.) are allowed within the park.

2.0 PURPOSE

This property was acquired in 1995 to protect, preserve and manage one of the larger tracts of undisturbed scrub and tidal creek wetlands in Charlotte County. Tippecanoe Environmental Park will be managed by Charlotte County for the conservation, protection, and enhancement of its natural resources and for compatible public recreation.

It is the goal of Charlotte County to continue to restore and manage the park for the optimal health of each habitat and to maximize the diversity of both flora and fauna within the communities and habitats onsite. Priority management objectives include:

- Focus on managing for the Florida scrub-jay as an umbrella species where appropriate.
- Increase suitable habitat for the Florida scrub-jay to aid in the overall expansion of the species in Charlotte County.
- Protect water resources of Tippecanoe Bay.
- Increase habitat suitability for other known or potential listed species.
- Manage for appropriate species diversity.

These objectives do not allow for the displacement of any natural habitat or environmental community by another by management design: i.e. it is not acceptable to manage mesic flatwoods for scrub-jay habitat.

The future land use and zoning designations were changed between 2002-2006. The final future land use designation for Tippecanoe is Resource Conservation. The zoning designation for Tippecanoe is Environmentally Sensitive.

Objectives of Recreation and Open Space Element, of the Charlotte County, Smart Charlotte 2050 Plan that would be furthered by managing Tippecanoe include:

- **REC Objective 1.2 Park and Recreation Maintenance and Management**
To protect and maintain existing parks and assets to preserve physical, environmental, functional, recreational and aesthetic values.
- **REC Policy 1.2.1 Public Awareness**
The County shall protect, restore, and manage natural resources in parks and provide interpretive information regarding environmental resources, conservation easements and ecosystems within parks. The County shall consider

the proper long-term ecological functions and recreational value of the land and will work to increase public awareness and understanding of ecological systems.

- **REC Policy 1.2.2 Park Management and Maintenance Guidelines**
The County shall develop and implement guidelines for all park assets and improvements that will serve to provide a uniform basis for establishing management and maintenance practices and criteria which consider periodic, short and long-term needs.
- **REC Policy 1.2.3 Invasive Species Removal**
The County shall develop and pursue invasive, exotic plant and animal eradication programs for parks and open space by 2012.

Objectives of Natural Resources Element, of the Charlotte County, Smart Charlotte 2050 Plan that would be furthered by managing the Mitigation Area include:

- **ENV Policy 2.2.7 Environmental Acquisition and Management**
The County shall acquire and manage environmental lands using all available opportunities including, but not be limited to: levying an ad valorem tax; obtaining State, Federal and non-profit grant funding; land swaps; public/private partnerships; public/public partnerships (such as Florida Communities Trust); community land trusts; and conservation easements. All lands acquired by the County for preservation shall be managed to retain their environmental value.
- **ENV Policy 2.2.11 Land Management**
The County, or duly authorized management agencies, shall develop and implement long range management plans for preservation or conservation lands consistent with the natural resources found on these properties.
- **ENV Policy 2.2.12 Public Awareness of Environmental Lands**
In cooperation with other government agencies and non-profit groups, the County shall work to increase public awareness, appreciation, and (consistent with the resources found at each site) access to the publicly owned preserves and environmental parks within the County's borders.
- **ENV Policy 2.3.6 Exotic Plant Removal**
The County shall continue to enforce the removal of invasive exotic plants. The County shall also prohibit the planting of species listed as noxious weeds by 5B-57.007, Florida Administrative Code, and listed as invasive species on the Florida Exotic Pest Plant Council Invasive Plant Lists.
- **ENV Policy 2.3.8 Environmental Education**
The County shall support efforts to increase the public's understanding and stewardship of wildlife, natural communities, and other natural resources through partnerships with non-profit organizations such as the Florida Master

Naturalist Program, the Florida Yards and Neighborhoods Program, and the University of Florida Food and Agricultural Sciences program.

Management of the environmental park will also further the acquisition and management goals of the Florida Department of Environmental Protection (DEP) by adding conservation and recreational lands adjacent to Charlotte Harbor Buffer Preserve; and to the Charlotte County Community Services Department by adding conservation and recreation lands next to Tippecanoe II (Tippecanoe FCT # 01-063-FF1).

3.0 NATURAL AND CULTURAL RESOURCES

Tippecanoe has a diverse assemblage of natural communities within the property, including Xeric Hammock, Upland Hardwood Forest, Scrub, Scrubby Flatwoods, Mesic Pine Flatwoods, Wet Flatwoods, Maritime Hammock, Alluvial Forest, Salt Marsh, and Coastal Dune Lake. The natural communities are delineated in **Exhibit D**. The natural communities are described in detail below. Staff continually monitors the site on a regular basis throughout the year. When occurrences of previously unknown protected and special plant and animal species are observed onsite these observations will be reported to FNAI utilizing the FNAI Field Report Forms or on the FNAI web site at: http://www.fnai.org/FNAI_data/RareSpeciesDataForm.cfm.

3.1 Natural Communities

Xeric Hammock

A small patch of approximately 5 acres of xeric hammock is found along SR 776 in the northern portion of the park. Due to the characteristics of the community and the close proximity of a major road (SR 776) to portions of the xeric hammock it is uncertain if it would be burned. Additional xeric hammock occurs across the northern parts of the Park for a total of about 16 acres. This xeric hammock is an advanced successional stage of the neighboring oak scrub (FNAI 2010). FNAI characterizes xeric hammocks as a denser low-canopy forests with little or open understory with shrubs characteristic of scrub. Typical plants in a xeric hammock include live oak (*Quercus virginiana*), sand live oak, saw palmetto, sparkleberry (*Vaccinium arboreum*), pignut hickory (*Carya glabra*), redbay (*Persea borbonia*), American holly (*Ilex opaca*), wild olive (*Osmanthus americanus*), and beautyberry (*Callicarpa americana*). Typically, xeric hammocks develop when fire has been excluded for 30 or more years. When fire occurs, typically every 30 to 50 years, it may be devastating and change the community.

Management goals for this habitat type are as follows:

- Over-story reduction to a height no greater than 4m. This pocket of xeric hammock will be managed with similar goals to scrub habitat

Mesic Hammock

Tippecanoe contains approximately 11 acres of mesic hammock. FNAI characterizes upland hardwood forest as a well-developed evergreen hardwood and/or palm forest on soils that are rarely inundated. The canopy is typically closed and dominated by live oak (*Quercus virginiana*), with cabbage palm (*Sabal palmetto*) generally common in the canopy and subcanopy. In the central and southern peninsula, abundant epiphytes on live oaks and cabbage palms are a characteristic feature of mesic hammocks. The shrubby understory may be dense or open, tall or short, and is typically composed of a mix of saw palmetto (*Serenoa repens*), American beautyberry (*Callicarpa americana*), American holly (*Ilex opaca*), gallberry (*I. glabra*), sparkleberry (*Vaccinium arboreum*), hog plum (*Ximenia americana*), common persimmon (*Diospyros virginiana*), highbush blueberry (*Vaccinium corymbosum*), and/or wax myrtle (*Myrica cerifera*). Tropical shrubs such as Simpson's stopper (*Myrcianthes fragrans*) and wild coffee (*Psychotria nervosa*) are common in more southern mesic hammock. The herb layer is often sparse or patchy. Mesic hammock may occur as "islands" on high ground within basin or floodplain wetlands, as patches of oak/palm forest in dry prairie or flatwoods communities, on river levees, or in ecotones between wetlands and upland communities. The mesic hammock onsite runs parallel to the Flamingo Waterway canal, along the levee like bank between the canal and firebreak, where fire is commonly excluded with a large patch extending into the interior along part of the original creek bed.

Management goals for this habitat are as follows:

- Continue to manage exotic/invasive species.

Scrub

The park contains approximately 42 acres of scrub habitat. The FNAI ranks scrub habitat as imperiled both in-state (S2) and globally (G2) (FNAI 2010). Florida scrub communities are unique to the state, although several neighboring states have similar habitats. FNAI characterizes scrub to be dominated by evergreen shrubs with or without a canopy of pines. Scrub is found on white sandy infertile soils, groundcover, if any, consists of lichens and herbs. Common vegetation includes sand pine, sand live oak, myrtle oak, Chapman's oak, scrub oak (*Quercus inopina*), saw palmetto, rosemary (*Ceratiola ericoides*), rusty lyonia (*Lyonia ferruginea*), scrub hickory (*Carya floridana*), scrub palmetto (*Sabal etonia*), hog plum (*Ximenia Americana*), silkbay (*Persea humilis*), beak rush (*Rhyncospora* spp.), milk peas (*Galactica* spp.), and staggerbush (*Lyonia* spp.) (FNAI 2010). The condition of scrub habitat within the park varies widely from good condition to badly overgrown due to fire suppression. Both mechanical vegetation reduction and prescribed fire will be utilized to restore and maintain this community.

Management goals for this habitat type are as follows:

- Reduction of canopy height to 4m or less.
- Reduce understory density and increase bare sand to 20%
- Conduct prescribed burns in all units with scrub habitat by 2023

Scrubby Flatwoods

Tippecanoe contains approximately 71 acres of scrubby flatwoods. Like scrub, scrubby flatwoods are mostly limited to Florida; FNAI ranks scrub habitat as imperiled both in-state (S2) and globally (G2) (FNAI 2010). FNAI characterizes scrubby flatwoods by an overstory of widely spaced pines and a short, shrubby understory of saw palmetto (*Serenoa repens*), scrub oaks, wiregrass (*Aristida* spp.), rusty lyonia, lichens, and tarflower (*Bejaria racemosa*) (FNAI 2010). The scrubby flatwoods communities' onsite are not disturbed and in fairly good condition; some areas, however, are overgrown to varying degrees due to fire suppression. Both mechanical vegetation reduction and prescribed fire will be utilized to maintain this community.

Management goals for this habitat are as follows:

- Continue to burn every 3-5 years
- Continue to manage exotic/invasive species

Mesic Pine Flatwoods

The park contains approximately 134 acres of mesic pine flatwoods habitat. The Florida Natural Areas Inventory (FNAI) indicates mesic flatwoods occur throughout Florida and the lower southeastern coastal plain (FNAI 2010). FNAI characterizes mesic pine flatwoods by an open canopy of tall pines with a low ground layer of shrubs and grasses, with little to no mid-story vegetation. Common ground vegetation includes saw palmetto, gallberry (*Ilex glabra*), runner oak (*Quercus minimia*), shiny blueberry (*Vaccinium myrsinites*), wiregrass (*Aristida* spp.), and broomsedge (*Andropogon* spp.) (FNAI 2010). The mesic pine flatwoods within the park is in fairly good condition, there is some overgrowth, especially with respect to saw palmetto, due to fire suppression. Both mechanical vegetation reduction and prescribed fire will be utilized to maintain this community.

Management goals for this habitat type are as follows:

- Remove 40% of all trees DBH<10in,
- Reduce BA to approximately 50-60% by 2019
- Conduct a minimum of 2 prescribed burns in Mesic Pine Flatwoods by 2027

Wet Flatwoods

The park contains approximately 23 acres of wet flatwoods. The FNAI states that wet flatwoods are common throughout Florida and the southeast outer coastal plain (FNAI 2010). FNAI characterizes wet flatwoods as pine forests with little to no mid-story and a ground cover of hydrophytic shrubs and grasses. Wet flatwoods are typically found in ecotonal areas between pine flatwoods habitats and forested or non-forested wetlands. Common vegetation includes South Florida slash pine (*Pinus elliottii*), large gallberry (*Ilex coriacea*), fetterbush (*Lyonia lucida*), and wax myrtle (*Myrica cerifera*.) (FNAI 2010). The wet flatwoods within the park is found in the southern area between the mesic pine flatwoods and the salt marshes. Prescribed fire will be the primary management tool utilized to maintain this community.

Management goal for this habitat type are as follows:

- Continue to manage exotic/invasive species
- Conduct a minimum of 2 prescribed burns by 2027

Maritime Hammock

Tippecanoe contains approximately 6 acres of maritime hammock. The Florida Natural Areas Inventory (FNAI) ranks maritime hammock as imperiled in-state (S2) and somewhat rare or uncommon and restricted globally (G3) (FNAI 2010). FNAI characterizes maritime hammock as an evergreen hardwood forest on a coastal dune. Within the hammock there is a welldeveloped sub-canopy and a sparse herbaceous layer. Maritime hammocks typically contain cabbage palm (*Sabal palmetto*), live oak (*Quercus virginiana*), red cedar (*Juniperus virginiana*), southern magnolia (*Magnolia grandiflora*), and wax myrtle (*Morella cerifera*) (FNAI 2010).

Management goals for this habitat type are as follows:

- Continue to manage exotic/invasive species

Bottomland Forrest

Tippecanoe contains approximately 10 acres of bottomland forest. Situations where bottomland forest occurs include several distinct ecological settings in Florida: along rivers and tributaries, on higher terraces and levees in floodplains, and in somewhat isolated depressions that do not flood frequently. Bottomland forests along smaller streams are prone to periodic flooding attributable to localized rainfall that increases seepage and runoff from surrounding uplands. Typical vegetation includes sweetgum (*Liquidambar styraciflua*), sweetbay (*Magnolia virginiana*), water oak (*Q. nigra*), live oak (*Q. virginiana*), swamp dogwood (*Cornus foemina*), possumhaw (*Ilex decidua*), swamp bay (*Persea palustris*), and wax myrtle (*Myrica cerifera*). More flood tolerant species that are often present include American elm (*Ulmus americana*) and red maple (*Acer rubrum*) (FNAI 2010). The bottomland forests within Tippecanoe can be found along the summation of many of the creeks and flow ways throughout the park.

Management goals for this habitat type are as follows:

- Continue to manage exotic/invasive species

Tidal Marsh

The park contains approximately 29 acres of tidal marsh. Another 44 acres of tidal marsh occurs along the west edge of the park and is managed as part of the park though it is technically part of the State's Charlotte Harbor Buffer Preserve. Tidal marsh communities occur throughout the state in coastal areas where there is no high-energy wave action (FNAI 2010). FNAI characterizes tidal marsh as a largely herbaceous community that is affected by tides. There may be zones of vegetation based on the tidal influence in that area. Common vegetation includes saltmarsh cordgrass (*Spartina alterniflora*) needle rush (*Juncus roemerianus*), and sawgrass (*Cladium jamaicense*) (FNAI 2010). The condition of the tidal marsh is excellent; fire has run through on an occasional basis. Occasional prescribed fire will be the primary management tool utilized to maintain this community.

Management goals for this habitat type are as follows:

- Continued maintenance of exotic/invasive species,
- Introduction of prescribed fire 3 times by 2027

Rudural (Mount Tippecanoe)

Mount Tippecanoe is located at the southeast tip of the project site. During development of the surrounding areas, including SR 776 and the straightening of the Flamingo Waterway – formally Flop Buck Creek), a mound of fill was created by various deposits. Since that time the mound has become naturally vegetated with native species. The high elevation of the mound offers the opportunity for visitors to look over Tippecanoe Bay and all the way out to Charlotte Harbor. Management of Mount Tippecanoe involves monitoring and treating the area for exotic vegetation as necessary.

Listed Plant Species

Two species of federally or state-listed plant species have been observed within Tippecanoe Environmental Park; Pretty False Pawpaw (*Asimina pulchella*) (Federally and state- endangered) and Golden leather fern (*Acrostichum aureum*) (state threatened). In addition, the Florida bonamia (*Bonamia grandiflora*) (federally threatened and state endangered) and the many-flowered grass pink (*Calopogon multiflorus*) (state threatened) have the potential to exist within scrub and flatwoods communities in Charlotte County (Chaffin, 2000 and Florida Department of Agriculture & Consumer Services, Florida Forrest Service, 2007a). Staff utilizes appropriate management techniques as outlined by the State and Federal guidelines.

3.2 Invasive/Exotic Plants and Feral Species Management

Exotic nonnative invasive plant species reduce the quantity and quality of habitat available for native wildlife. Tippecanoe Environmental Park is surrounded primarily by other conservation lands, making it slightly less susceptible to invasive nuisance species; however, dispersal by birds and other wildlife (e.g., feral hogs) as well as by wind does occur.

Exotic invasive species that have been observed within the park include Brazilian pepper, melaleuca (*Melaleuca quinquenervia*), Japanese climbing fern (*Lygodium japonicum*), and cogongrass (*Imperata cylindrica*). These species are ranked as Category I according the 2015 List of Invasive Species from the Florida Exotic Pest Plant Council (FLEPPC). Despite all the opportunities, nuisance exotic encroachment is somewhat sparse; all exotic invasive species are at manageable levels. Staff has treated larger infestations in the past and attempts to eradicate nuisance exotics upon discovery. Due to the small size of current exotic invasive plant infestations there are no plans for re-vegetating treatment areas. Staff will continue to review on a case by case basis if re-vegetation is needed at the time of treatment.

Prevention is the most effective method of control; staff continually monitors the sites for early detection and control of populations. Currently, efforts to eradicate these Category I species closely parallel the exotic species control plans recommended by FLEPPC. Application of the most recent treatment recommendations by species are available via the FLEPPC web site (<http://www.fleppc.org/>).

Exotic/Feral Animals

Tippecanoe Environmental Park does have an active breeding population of feral pigs (*Sus scrofa*). County staff has contracted with the United States Department of Agriculture since 2016 for the control of exotic/invasive fauna on County conservation lands. Although the trapping program has been very successful, the feral hog population persists. Overall, the contracted numbers of feral hogs have been lowered and impacts to the natural community has been minimized.

Monitoring

The site is monitored on a regular basis, to exclusively assess the presence of invasive/exotic plant and animal species.

3.3 Restoration

Tippecanoe Environmental Park has been County owned and maintained since 1995. There are no plans for restoration now.

3.4 Prescribed Burning

Prescribed burning has taken place on Tippecanoe since its purchase for both ecosystem restoration and maintenance. Each of the major vegetation communities found on the park, mesic flatwoods, scrubby flatwoods, and scrub, are fire adapted and the use of prescribed fire is the best way for staff to manage a healthy ecosystem.

Burn priorities and rotations schedules are revisited throughout each year as both management resources and growing conditions change. All management units have perimeter fire-lines which are maintained throughout the year. Burning is coordinated with the DOF. Charlotte County's outreach program to inform residents of the area of the benefits of prescribed burns includes presentations, direct mailings and additional coordination with FFS.

3.5 Listed Species

Charlotte County maintains a list of species observed within the Tippecanoe Environmental Park by County staff. This list includes birds, mammals, amphibians, reptiles. As additional species are observed throughout the changing of seasons, via wildlife surveys or during management efforts, the list shall be updated.

Species found on the Federal and/or State endangered and threatened species lists are referred to as “listed species.” For management purposes, Charlotte County Community Services also refers to the biological status as reported by FNAI.

Listed animal species that have been observed in the five most prominent vegetation communities include:

- **Mesic Pine Flatwoods** – gopher tortoise (*Gopherus polyphemus*), bald eagle (*Haliaeetus leucocephalus*)
- **Scrub** – Florida scrub-jay (*Aphelocoma coerulescens*), Florida mouse (*Podomys floridanus*), gopher tortoise (*Gopherus polyphemus*)
- **Scrubby Flatwoods** – Florida scrub-jay (*Aphelocoma coerulescens*), Florida mouse (*Podomys floridanus*), gopher frog (*Rana capito*), gopher tortoise (*Gopherus polyphemus*)
- **Tidal Marsh** – little blue heron (*Egretta caerulea*), white ibis (*Eudocimus albus*)
- **Xeric Hammock** – gopher tortoise (*Gopherus polyphemus*)

Additionally, a little blue heron rookery and an active bald eagle nest are both present in the park.

Listed Species of Tippecanoe Environmental Park

Endangered (E), Threatened (T), Species of Special Concern (SSC)

Common Name	Genus	Species	State	Fed
Bald Eagle	<i>Haliaeetus</i>	<i>leucocephalus</i>	Delisted: Protected	
Florida Scrub-jay	<i>Aphelocoma</i>	<i>coerulescens</i>	T	T
Little Blue Heron	<i>Egretta</i>	<i>caerulea</i>	T	
Florida Sandhill Crane	<i>Grus</i>	<i>canadensis pratensis</i>	T	
Tricolored Heron	<i>Egretta</i>	<i>tricolor</i>	T	
Wood Stork	<i>Mycteria</i>	<i>americana</i>		T
American alligator	<i>Alligator</i>	<i>mississippiensis</i>		T
Gopher Tortoise	<i>Gopherus</i>	<i>polyphemus</i>	T	

Charlotte County is committed to managing the various ecological communities at Tippecanoe to increase the diversity of flora and fauna, including both listed and common species. A key part of such management is ongoing monitoring. Monitoring takes place in the form of incidental observations, semi-formal surveys associated with monthly site inspections, and formal surveys for certain species and species diversity. Specific species surveys that are conducted include those for Florida scrub-jay and gopher tortoise. All native wildlife species are protected in the park.

The focus of land management activities in Management Unit 4 is for the optimal habitat for gopher tortoises as a Long-Term Recipient Site, permitted through the Florida Fish and Wildlife Conservation Commission. This unit will be managed in perpetuity for gopher tortoise conservation. A separate management plan (**Appendix D**) outlines the goals and objectives to enhance and preserve gopher tortoises within Unit

4, these goals, objectives, management considerations and monitoring requirements are outlined below:

- Management Objectives
 - Focus on managing for the Gopher Tortoise as a keystone species.
 - Increase suitable habitat for the Gopher Tortoise on Tippecanoe utilizing the guiding principles outlined in the Florida Fish and Wildlife Conservation Commission's (FWC) Gopher Tortoise Management Plan (September 2007).
 - Habitat management guidelines for gopher tortoises recommend maintaining the pine and hardwood canopy cover at 60% or less.
 - Habitat management guidelines for gopher tortoises recommend maintaining herbaceous groundcover at 30-50% or greater.
 - Increase habitat suitability for other known or potential listed species and Gopher Tortoise commensals.

- Management Needs and Restoration
 - Invasive Exotic Proposed Management
 - Spot treatments to occur when exotic invasive vegetation is observed onsite.
 - Due to the small nature of exotic invasive plant infestations there are no plans for re-vegetating treatment areas. Staff will review on a case by case basis if re-vegetation is needed at the time of treatment.

 - Tree Canopy Management
 - Current canopy conditions in the proposed gopher tortoise recipient site area are approximately 20% coverage.
 - To maintain the current canopy coverage of less than 60% in staff proposes to utilize an approximate 2-3-year burn cycle for potential pine dominated habitats and a slightly longer cycle in the scrub dominated habitats; however, the over-riding determination of the burn cycle will be dictated by site conditions.

 - Ground Cover Management
 - Current herbaceous groundcover conditions in the proposed gopher tortoise recipient site area are approximately 30% groundcover.
 - Maintaining herbaceous groundcover of 30-50% or more is directly tied to maintaining an open canopy, as described above.
 - In addition to maintaining an open canopy, staff will strive for early growing season burn, when weather conditions

permit; this will hopefully produce a more pronounced vegetative response compared to dormant season burns.

- Monitoring
 - Habitat assessments will be performed every three years and submitted to FWC. The report will summarize the habitat management conducted and the results of habitat monitoring.
 - Tortoise population monitoring will be conducted every three years and submitted to FWC. The report will summarize the tortoise density surveys and monitoring.

3.6 Inventory of the Natural Communities

The natural communities will be monitored once per year. In this routine monitoring, photo points will be taken, and any information on identified listed species will be forwarded to the Florida Natural Areas Inventory using the forms located in (**Appendix A**).

3.7 Archeological, Cultural, and Historical Resources

Charlotte County had an archeological survey conducted at Tippecanoe Environmental Park in 1997 (**Appendix E**). The area in and around Tippecanoe has a variety of recorded sites of middens and mounds. There are two recorded sites listed in the Florida Master Site File maintained by the Department of State, Division of Historical Resources for Tippecanoe. Around 1981, “No Name Creek Midden” Master Site File #8CH73, was discovered straddling both sides on an unnamed tidal creek. Collections from this midden included pottery shards, mollusks shells, and bone fragments; however, nothing was found to indicate a single time period, it was hypothesized that the time ranged from B.C. 300 – A.D. 1500. Additionally, in 2008 another midden was discovered by County staff, no collections were taken from this midden.

The resources onsite will be part of the educational materials developed for the site; however due to the sensitive nature of the midden, the midden itself will not be identified by any signage. This will help to prevent the collection of artifacts or the disturbance of the archaeological and historic sites. Due to the preservation of the Tippecanoe Environmental site, the middens will remain protected from any development pressures. If additional evidence is found to suggest more archaeological or historic resources at the project site, the Division of Historical Resources will be notified immediately. Charlotte County will manage the archaeological and historic resources in compliance with the provisions of Chapter 267, Florida Statutes Specifically Sections 267.061 2(a)and (b).

4.0 SITE DEVELOPMENT AND IMPROVEMENT

4.1 Acknowledgement Sign

The acknowledgment sign will be designed to "FCT" specifications, at least 3' x 4', and include the FCT logo, the date the property was acquired and with FCT funds. Signs are being created to assist the public in enjoying the features of this property. In addition to the acknowledgment sign trail signs and signs directing the public to the canoe/kayak launch site as well as other site amenities are on the property.

4.2 Existing Physical Improvements

Existing physical structures within the Park include fences and gates, walking trails, parking areas, and a canoe/kayak launch. These improvements are designed to improve the ability of the public to enjoy the natural resources of the Park while protecting these resources. All of Charlotte County's environmental parks and preserves are "pack in, pack out" facilities, trash cans are not provided.

- **Entrance Signage** – An entrance sign, bearing the Charlotte County logo and park name has been installed at the entrance area at Tea St., and an archway sign at the main trailhead. Included with these signs is an additional acknowledgement sign identifying the Park as being purchased with funds from "Florida Communities Trust."
- **Fencing** – Four strand smooth wire fencing is installed along the north boundary of the park and delineates the boundaries. Gates with pedestrian walk-throughs are strategically placed to allow pedestrian access.
- **Walking Trails** – Seven miles of walking trails exist throughout the park. Most trails are native surface and serve as fire breaks for prescribed burning. A crushed shell surface trail makes a loop through mesic flatwoods and scrub and along a tidal creek, providing an ADA accessible experience.
- **Foot Bridges/Boardwalks** – The trail system includes eight-foot bridges of various types. Two of the bridges are low boardwalk style, affording safe passage over seasonally wet areas. The other six provide access across small creeks.
- **Parking Areas** – Parking is available at the main trailhead. The parking and trailhead is located at the rear of the stadium parking for the Tampa Bay Rays and becomes unavailable during spring training baseball games unless visitors pay for access to the stadium parking. The Stadium entrance parking is comprised of compacted grass and shell parking; over 200 parking spaces are provided. Access to park by vehicle is prohibited by bollards and gates. Parking is

also available at the Tea St. entrance with no daytime restrictions and provides access to the canoe/kayak launch. The Tea St. entrance parking is comprised of compacted grass and shell parking; a minimum of 10 parking spaces are provided. Access to park by vehicle is prohibited by a gate.

- **Canoe/Kayak Launch** – A canoe/kayak launch is available at the Tea St. entrance.
- **Toilet** – A self-composting toilet is located near the main trailhead.
- **Kiosk** – A kiosk at the main trailhead has been installed.
- **Benches** – Benches are provided at two locations along trails.
- **Interpretive Signs and Kiosks** – A two-paneled kiosk at the main trailhead will include educational panels and a large park map will be featured.
- **Sidewalks/Bike Lanes** – Sidewalks and bike lanes were added to SR 776 when the road was expanded providing for alternative transportation methods.
- **Bike Racks** – Bike racks are provided at the Stadium entrance.

4.3 Proposed Physical Improvements

Proposed physical improvements will provide for appropriate public access, while meeting the management goal of conservation, protection, and enhancement of the Park's natural resources. Charlotte County will request written approval from FCT before undertaking any alterations or physical improvements that are not addressed in the MP.

Surveys will identify any protected vegetation or wildlife inhabiting the site. Site plans will be adjusted accordingly to protect any such species. Relocation of listed species may be considered as an alternative. Any relocation efforts will adhere to all permits as may be required by FWC and USFWS. The development of nature trails, interpretive signs and displays, observation areas, and permanent fire breaks will utilize existing roads, trails, disturbed areas, and fire breaks to the greatest extent possible to minimize disturbance of native vegetation and reduce fragmentation.

4.4 Wetland Buffer

A 100-foot buffer will be provided between parking lots, major facilities, and wetlands. (*Exhibit F*)

4.5 Storm water Facilities

Storm water facilities were designed to provide recreational open space or wildlife habitat in a park-like setting and are minimal along the entry road. The County is

initiating a new county-wide holistic water quality monitoring program. This program includes the storm water systems on the adjacent Charlotte Sports Park property and will start in 2022; data will be submitted via stewardship reports annually.

4.6 Hazard Mitigation

The Tippecanoe Environmental Park is located entirely within the 100year floodplain. *(Exhibit I)* As such no major structures are planned for construction on the property. The kayak/canoe launch is located on the Flamingo Canal and all amenities are located more than 100 feet from the canal. *(Exhibit F)* This property will function as a buffer for wind and storm surge associated with a storm event.

4.7 Education Program

Charlotte County provides at least 12 regularly scheduled environmental or historical educational programs per year at Tippecanoe Environmental Park conducted by trained educators or resource professionals.

Charlotte County has a current contract with Charlotte Harbor Environmental Center. This contract provides for 12 guided walks per year. In addition to these walks county staff and volunteers from CHEC conduct some exotic/invasive flora species treatments.

4.8 Permits

Charlotte County has obtained a Gopher Tortoise Recipient Site Permit. This permit is on a 3-year reporting cycle.

There is ongoing coordination of land management activities, along with review of the management plan with the Coastal and Heartland National Estuary Program and Florida Department of Environmental Protection Division of State Parks for the adjacent Charlotte Harbor Preserve State Park (fka Charlotte Harbor Reserve).

4.9 Easements, Concessions and Leases

No easements or leases are found on Tippecanoe Environmental Park. No concessions have been granted to date. In addition to private parties, commercial kayak tours and rentals utilize the canoe/kayak launch and a concession may be considered in the future.

Any revenue generated on the site will be placed into a separate account to be used solely for the management of Tippecanoe. Charlotte County will provide FCT 60 days prior written notice and information regarding any lease, management contract, or concession agreement proposed for the site and will seek FCT approval before granting any such revenue generating contract.

5.0 MANAGEMENT NEEDS

5.1 Coordinated Management

Community Services' staff is committed to working with all interested parties in accomplishing the management goals. As appropriate, FFS and DEP are contacted for coordination of activities, including cooperative ventures where we receive and/or aid in mechanical vegetation reduction and prescribed burning. Coordination also takes place with FFS, DEP, and FWC concerning wildlife management. The Charlotte County Sherriff's Office, FWC law enforcement, and DEP each coordinate in security aspects of the property.

The Stadium entrance along SR 776 is access through the Charlotte Sport's Park. The parking area for this entrance of the park is part of the Charlotte Sport's Park; the parking area is unavailable only during spring training baseball games unless visitors pay for access to the stadium parking. The Tea St. entrance has no limitations.

5.2 Greenways and Trails

Charlotte County Resolution No. 980440A0 pledged to develop an integrated system of trails, greenways, corridors, preserves, and waterways, to provide a foundation for the eco-tourism industry, provide wildlife corridors, and enhance public access to and appreciation of the County's natural resources. Tippecanoe Environmental Park enhances Charlotte County's integrated network of greenways by creating publicly-owned, passive-use open space adjacent to and in the general vicinity of this integrated network. A map of publicly-owned land within the vicinity of the Park is provided in *Exhibit C*.

Tippecanoe Environmental Park has approximately seven miles of walking trails, which connect to the Charlotte Harbor Buffer Preserve State Park on the East side of the property. DEP does not maintain trails for hiking on this portion of the state park, but foot access is permitted to the public.

The canoe/kayak launch provides a public access point to the Flamingo Waterway, which is part of the DEP's Office of Greenways and Trails approved Charlotte County Blueway Trail (*Exhibit H*).

5.3 Staffing

The Division will provide staffing, management, and maintenance for the Park. A full time Environmental Specialist will be directly responsible for all land management activities. Assistance from other Environmental Specialists and additional Department staff will be available as needed and the support of the Division Manager and other administrative positions will be available. Additional staffing may be obtained through volunteers, non-profit organizations, and/or contracted services as needed.

5.4 Public Education and Outreach

The County is committed to providing appropriate passive outdoor recreational opportunities by allowing public access to the Park. Additional educational programming

opportunities designed to facilitate a greater understanding and appreciation of the natural resources may be provided as appropriate and as the need and public interest develops. The environmental education program may include:

- **Organized excursions into the Park.** Organized programs will meet FCT requirements. Currently a non-profit organization is contracted to lead educational nature walks throughout the year. Additional organized programming may be developed by staff or by non-profit organizations at the direction of the Division.
- **Self-guided excursions into the Park.** Trail signs and educational kiosks (including a large site map) will be installed at the Park. Trail maps and a wildlife checklist will be posted on the County's website; because of printing costs, the County does not plan to provide printed copies at the Park.

Organized program descriptions will be included in the annual stewardship report, including types of programs and the number of participants.

5.5 Maintenance

Charlotte County Community Services has the responsibility for managing and maintaining the Park. The maintenance objectives for the Park are visitor and employee health, safety, and welfare, maintenance of aesthetic qualities, and protection of natural resource values. Structures, such as bridges and fences, are inspected during monthly site inspections for maintenance and repair needs. Exotic vegetation treatment needs are met with both habitat management and trail maintenance activities. The site will have dedicated staff to perform routine maintenance tasks, including:

- Mowing and pruning of vegetation around the entrance, parking areas, trails, and fire breaks
- Upkeep and cleaning of the facilities (including parking areas, fencing, kiosks, and signage)
- Garbage and debris removal
- Land Management (including removal of exotic species and prescribed burning)

The Division may utilize contracted and/or volunteer services as needed to assist in maintenance tasks.

5.6 Security

Charlotte County is concerned about both the safety of visitors and the protection of natural resources. The Community Services' Parks and Natural Resources Division staff ultimately has the responsibility for site security, including prevention of vandalism, property damage, unauthorized vehicle access, and trespassing. A three-tiered approach to site security is employed:

- **Signage and Fencing** – Signs and fencing shall be installed to restrict vehicle access and warn against other restricted or prohibited activities.

- **Staff** – Division staff shall monitor the integrity of the fences, repair damage by vandalism, monitor the site for evidence of ATV use, and take measures to clarify restricted areas and activities to citizens with signage
- **Sheriff, Fire/EMS, and DOF** – Shall respond to emergency calls from citizens

Activities that are not compatible with passive natural resource based activities are prohibited. Such prohibited activities include alcoholic consumption, social gatherings except for nature hikes, personal acts considered indecent or not appropriate for all ages and all groups within the public, disturbance of the peace, hunting except for the contracted removal of exotic and/or nuisance animals, harassing of wildlife, harvesting, destruction and/or removal of vegetation, any other activity that may have a negative impact on visitors, wildlife and/or the ecosystem.

All wildlife species are protected, including venomous snakes and other dangerous animals, and shall not be killed, harmed or harassed by visitors or staff unless they present an immediate, clear and unavoidable threat, or are part of an exotic species removal program to be carried out by authorized personnel only. Safety against wildlife species is not considered a viable reason to carry a lethal weapon. Except when carrying a concealed weapon for personal safety, accompanied by a license to do so by the state, possessing a firearm, bow, crossbow, trap or other hunting device is considered the intent to hunt or take wildlife and is prohibited.

6.0 COST ESTIMATE AND FUNDING SOURCES

A portion of this Park was acquired using funds from FCT. The remainder was funded by Charlotte County Local Option Sales Tax. The Park will be managed using ad valorem County taxes.

The cost estimate was broken into seven major categories:

- **Natural Resource Protection**
 - Exotic vegetation treatment - \$12,000
 - Feral animal/Exotic plant monitoring – in house
 - Listed species survey – in house or volunteer
- **Resource Enhancement**
 - Controlled burning – \$5,600 (One rotation of all management units, approximately 350 burnable acres at approximately \$16 per acre, in house cost)
 - Mechanical thinning -In house
- **Archeological and Historical Resource Protection**
- **Educational Program**
 - Contracted Services (Nature Walks) - \$600
- **Maintenance**

- Mowing and pruning of vegetation around the entrance, fence, parking area, trails, and fire breaks -In house Upkeep of facilities (parking area, fencing, kiosk, signage) - \$1500 annually (Cost estimate based on current contract for environmental fencing)
- **Staffing** – See Section 5.3

7.0 PRIORITY SCHEDULE

A priority schedule that details a timeline for major events is included in **Appendix F**. This priority schedule covers 2017-2032.

8.0 MONITORING AND REPORTING

8.1 Stewardship Report

It is the Division’s responsibility to provide an Annual Stewardship Report each year on or before October 30th, as required by Rule 9K-7.013 F.A.C. which evaluates the implementation of the Management Plan.

Any proposed modification of the Management Plan and/or undertaking any site alternations or physical improvements that are not addressed in the FCT-approved Management Plan requires FCT review and approval.

8.2 Habitat Assessment Monitoring

The goals of habitat assessment monitoring are to evaluate management efforts to ensure they are meeting ideal habitat requirements that are required for the associated plant and animal species to thrive. Evaluations from these monitoring efforts will be included in the Annual Stewardship Report.

Monitoring efforts have been described in Sections 3.1, 3.4, and 3.5. Those monitoring efforts are summarized as:

- Ongoing inspection for feral pig (or other invasive species) damage.
- Listed Plant Survey
- Habitat photo monitoring
- Bird surveys
- Scrub-jay surveys
- Gopher tortoise surveys as needed
- General surveys/site inspections.

8.3 Revenue Report

It is the Division’s responsibility for preparing an Annual Revenue Report, due on July 31 of each year. This report will include revenue earned on the project site during the previous State of Florida fiscal year (July 1 – June 30).

All fees collected are placed in a segregated account solely for the upkeep and maintenance of the project site.

8.4 Single Audit Act Report

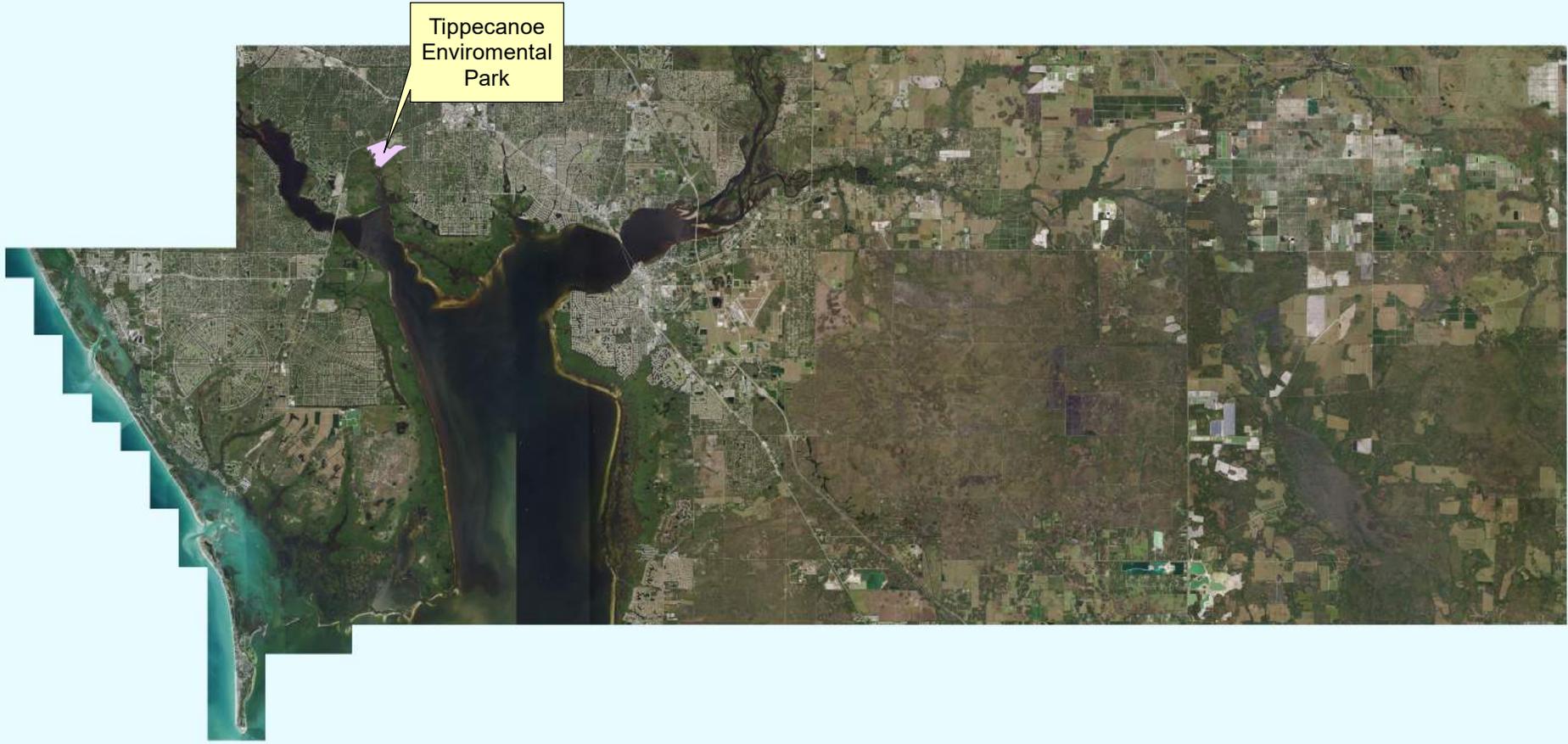
It is the Division's responsibility to determine whether or not it must submit a State single or project-specific audit for any given fiscal year in accordance with Section 215.97, Florida Statutes; applicable rules of the Department of Financial Services; and Chapters 10.550 (local governmental entities) or 10.650 (nonprofit and for-profit organizations), Rules of the Auditor General.

9.0 REFERENCES

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CHARLOTTE COUNTY

Tippecanoe Environmental Park
Exhibit A - Location



Stateplane Projection
Datum: NAD83
Units: Feet

Source: Community Development

Metadata available upon request



(Not To Scale)

CHARLOTTE COUNTY

Tippecanoe Environmental Park
Exhibit B - Boundary Map



Stateplane Projection
Datum: NAD83
Units: Feet

Source: Community Development

Metadata available upon request



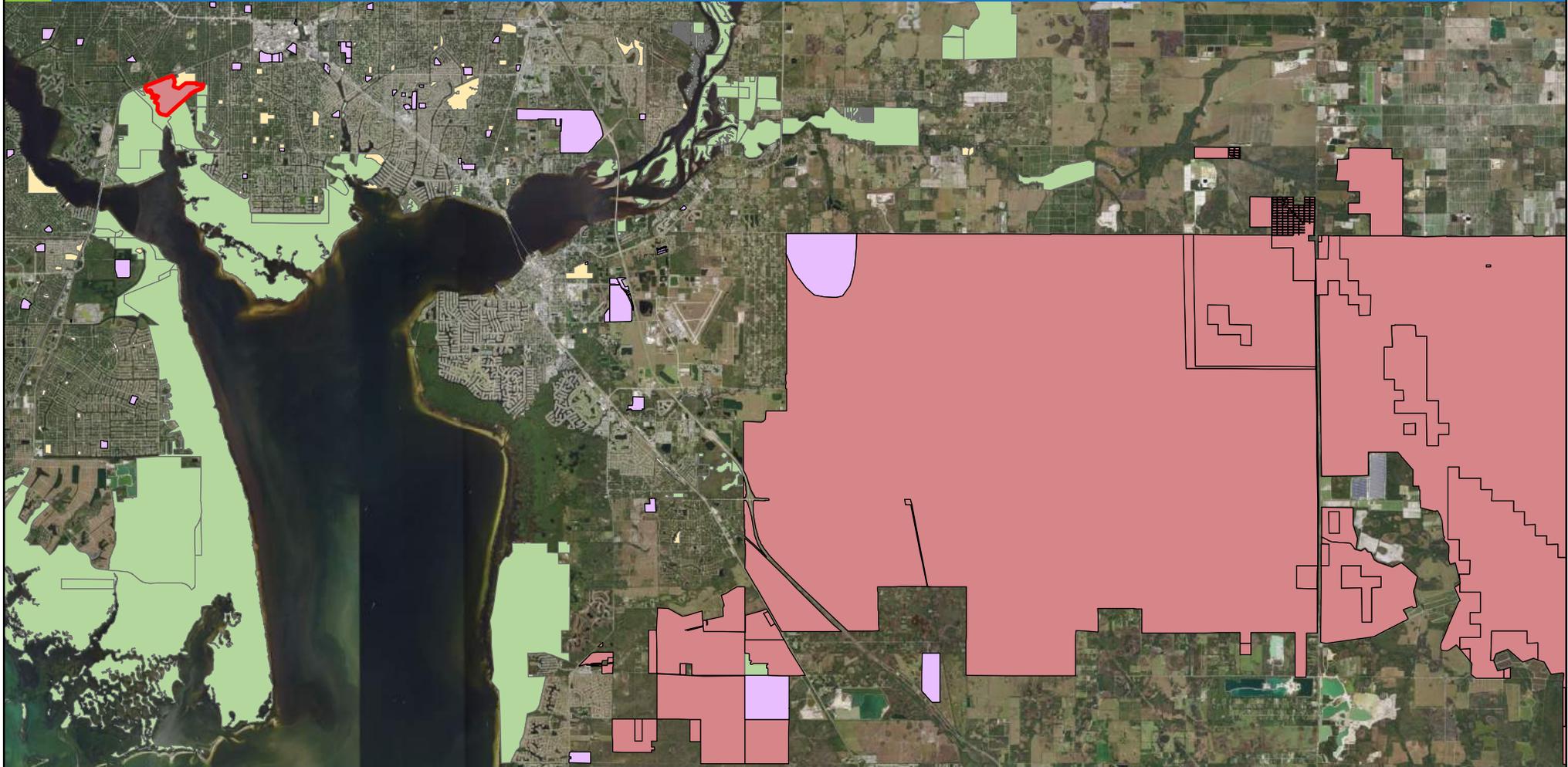
Park Boundary



(Not To Scale)

CHARLOTTE COUNTY

Tippecanoe Environmental Park
Exhibit C - Public Lands Map



Public Lands

-  Parks & Recreation
-  Preservation
-  Public Lands & Facilities
-  Resource Conservation
-  Park Boundary

Stateplane Projection
Datum: NAD83
Units: Feet

Source: Community Development

Metadata available upon request



(Not To Scale)

CHARLOTTE COUNTY

Tippecanoe Environmental Park
Exhibit D - Natural Communities

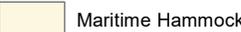


Natural Communities

Stateplane Projection
Datum: NAD83
Units: Feet

Source: Community Development

Metadata available upon request

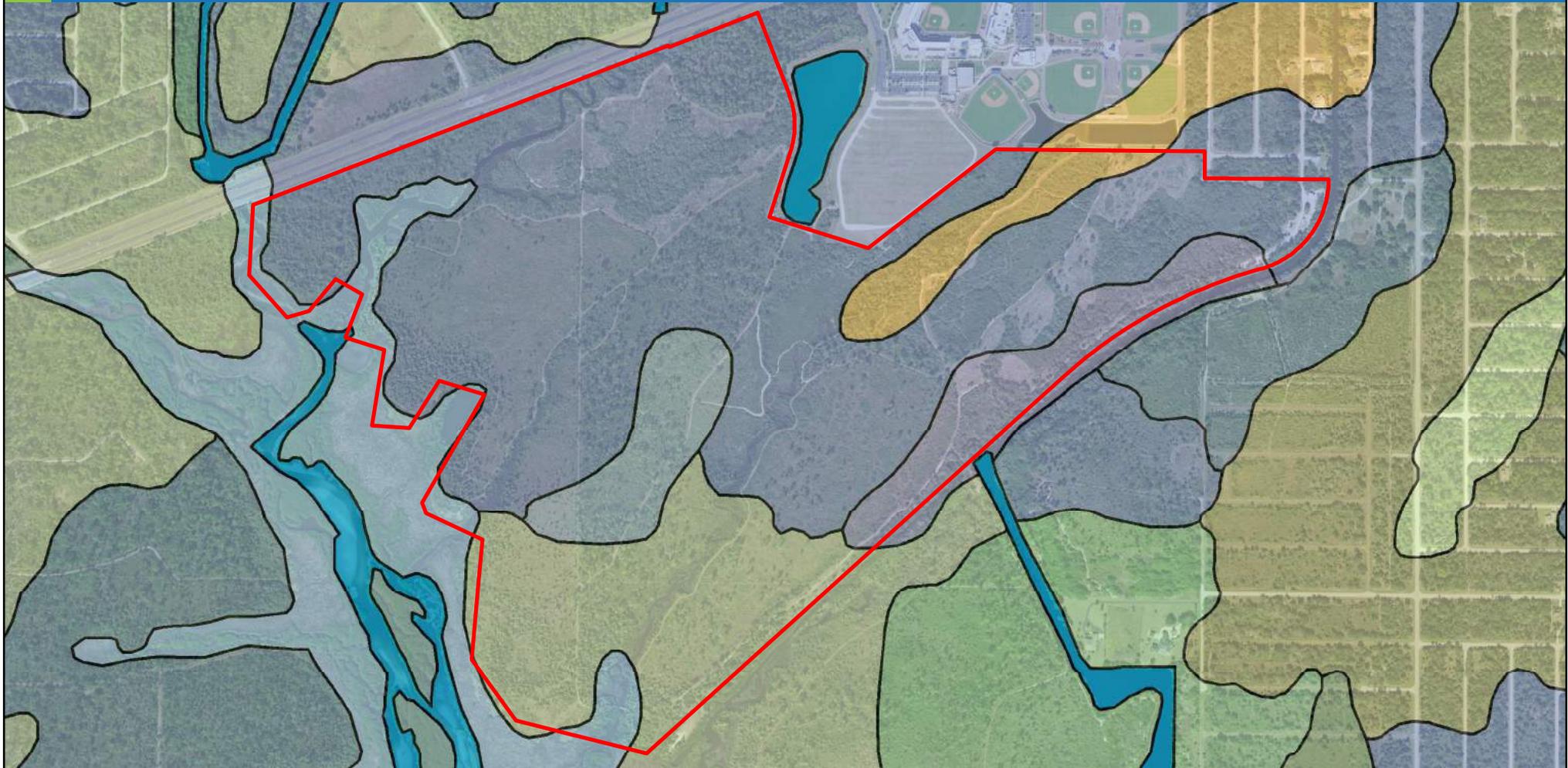
	Bottomland Forest		Maritime Hammock		Spoil		Park Boundary
	Flatwoods Lake		Mesic Flatwoods		Tidal Marsh		
	Floodplain Marsh		Mesic Hammock		Tidal Swamp		
	Hydic Flatwoods		Scrub		Xeric Hammock		
	Hydic Hammock		Scrubby Flatwoods				



(Not To Scale)

CHARLOTTE COUNTY

Tippecanoe Environmental Park
Exhibit E - Soils Map

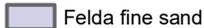
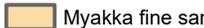
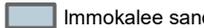
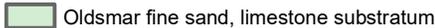
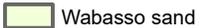
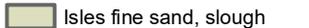
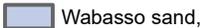
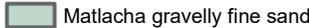


Stateplane Projection
Datum: NAD83
Units: Feet

Source: Community Development

Metadata available upon request

Legend

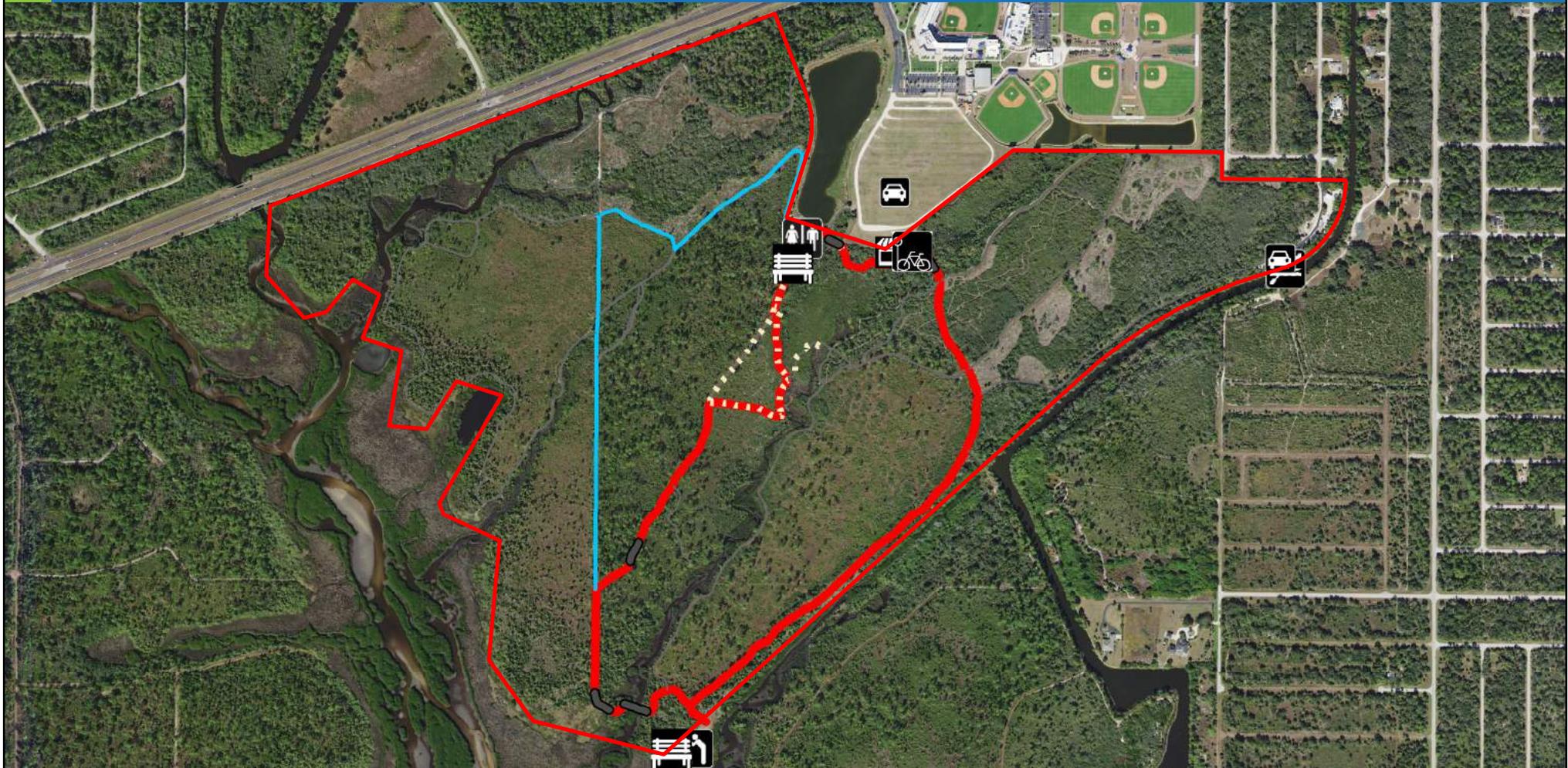
 Park Boundary	 Felda fine sand	 Myakka fine sand	 Pineda fine sand
Soil Type	 Immokalee sand	 Oldsmar fine sand, limestone substratum	 Wabasso sand
 Boca fine sand	 Isles fine sand, slough	 Oldsmar sand	 Wabasso sand, limestone substratum
 EauGallie sand	 Matlacha gravelly fine sand	 Peckish mucky fine sand	 Water
			 Wulfert muck



(Not To Scale)

CHARLOTTE COUNTY

Tippecanoe Environmental Park
Exhibit F - Site Plan



Legend

Stateplane Projection
Datum: NAD83
Units: Feet

Source: Community Development

Metadata available upon request

Trail

-  Park Boundary
-  Primary 1.87 mi
-  Secondary 0.91 mi
-  Tertiary 5.51 mi
-  ADA Trails
-  Boardwalks

Amenities

-  Bench
-  Bike Rack
-  Kayak Launch
-  Kiosk
-  Parking

-  Platform

-  Restrooms



(Not To Scale)

CHARLOTTE COUNTY

Tippecanoe Environmental Park
Exhibit G - Trails



Trails

	Primary	1.87 mi		Park Boundary
	Secondary	0.91 mi		
	Tertiary	5.51 mi		
	ADA Trails			
	Boardwalks			

Stateplane Projection
Datum: NAD83
Units: Feet

Source: Community Development

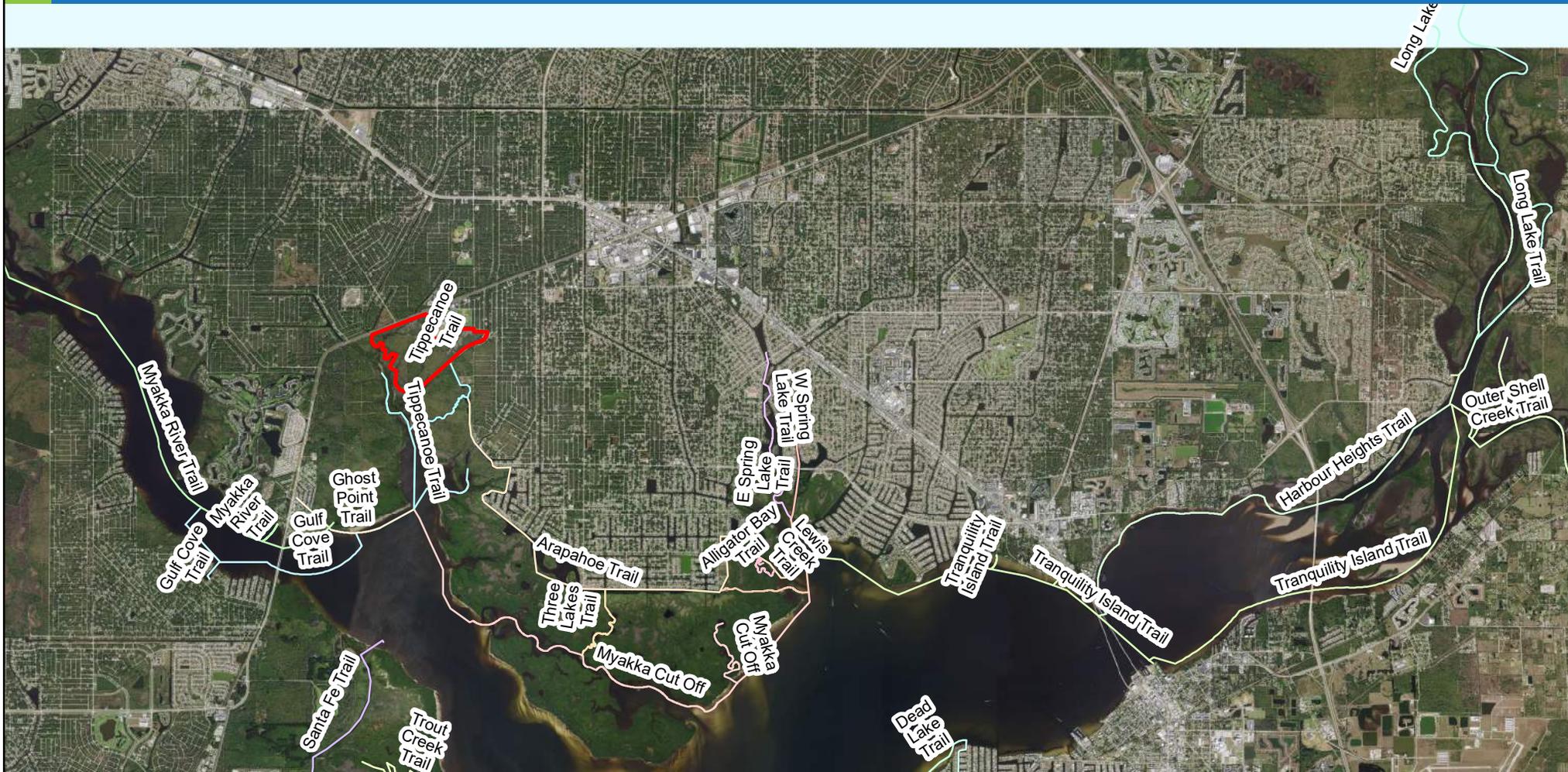
Metadata available upon request



(Not To Scale)

CHARLOTTE COUNTY

Tippecanoe Environmental Park
Exhibit H - Blueways Map



Stateplane Projection
Datum: NAD83
Units: Feet

Source: Community Development

Metadata available upon request

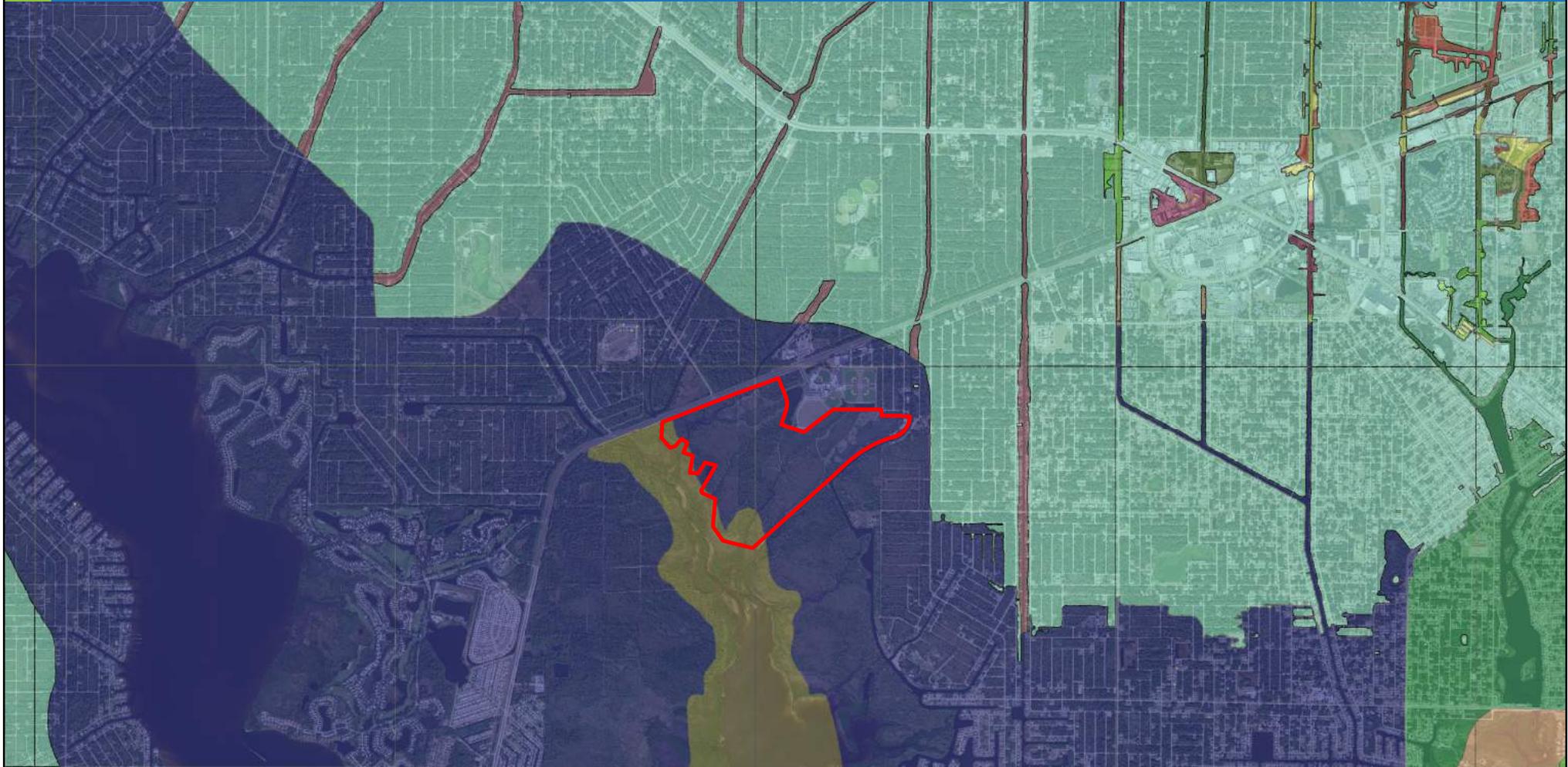
 Park Boundary



(Not To Scale)

CHARLOTTE COUNTY

Tippecanoe Environmental Park
Exhibit I - FEMA Flood Zones



Zoning Designation

Stateplane Projection
Datum: NAD83
Units: Feet

Source: Community Development

Metadata available upon request

 10AE	 12VE	 16AE	 8AE	 LOMA	 X500	 Park Boundary
 11AE	 13AE	 17AE	 8VE	 LOMR		
 11VE	 14AE	 18AE	 9AE	 X		
 12AE	 15AE	 19AE	 A	 X-ST		



(Not To Scale)

Appendix A



FLORIDA NATURAL AREAS INVENTORY

Field Report Form for Occurrences of Rare Plants, Animals, and Natural Communities

Report original field observations regarding a single species or community, at one location, and for (preferably) a single date. Use the back of the form or other sheets as necessary, and if you have any questions please call FNAI at 850-224-8207.

Please send completed form to: Florida Natural Areas Inventory, 1018 Thomasville Rd., Suite 200-C, Tallahassee, FL 32303

THANK YOU!

REQUIRED DATA

Your name: _____ Phone: _____ E-mail: _____

Address: _____ Date Submitted: _____

Name of observer(s): _____

Date of observation (m/d/yyyy): _____

Scientific name: _____ Common name: _____

Basis for identification: Personal knowledge Reference key Field guide Museum specimen Expert Other method

Name of reference key/guide/museum/expert: _____ Other ID method _____

County: _____

Latitude _____ N Longitude _____ W (if unknown, please attach a map or detailed description of the location)

Quantity seen (number of individuals, nests, burrows, or clumps, etc., or area occupied) _____

FNAI will include the location of this occurrence in publicly available data products unless you specifically request that we do not. If you want to make this request, please provide your reason for regarding the data "sensitive" (e.g. species subject to collection) _____

OPTIONAL DATA (all of the information below is optional – enter as time and data resources permit)

IDENTIFICATION

Photograph taken? Yes No (If possible, please attach a copy of the photo)

Specimen collected? Yes No Deposited at museum/herbarium? Yes No Repository _____ Collection # _____

Do you think your identification requires confirmation? Yes No

LOCATION

Site or place name (if known): _____

Precise directions to the occurrence that use a readily locatable and relatively permanent landmark on or near the site (such as a road intersection, bridge, or natural landform) as the starting point. Include distances and directions from landmarks, as appropriate. Please note – neither the directions nor the coordinate information will be provided to the general public if the data are to be considered sensitive, as indicated above.

For latitude/longitude only: Datum: NAD27 WGS84/NAD83 Unknown

Source of latitude/longitude coordinates? GPS Other If other, describe _____

If GPS: Make _____ model _____ accuracy _____ m DGPS? Yes No Unknown WAAS? Yes No Unknown

If possible, mark the site on a copy of a DOQQ photograph or a USGS 7.5' topographic map and attach to this form. Otherwise, using the back side of the form, please provide a sketch of the vicinity showing the occurrence in relation to towns, roads, landforms, water bodies, and other natural features, including ecological communities. Please include also an indication of scale and a North arrow.

OBSERVATION INFORMATION

Time of day _____ Estimate of total area observed _____m² or _____ acres. Percent of this area actually occupied by the population or community: _____%. Approximate dimensions of the area occupied: length_____m width_____m

How did you collect the data? (e. g., visually observed from road, trap or capture methods, walking a path through community, formal survey, etc.)

Is there other suitable habitat (unobserved) in the vicinity? Yes No Don't know Extent? (e.g., acres, miles) _____

Have you been to this location before? Yes No If so, when? _____

Did you previously observe this species or community? Yes No Did not look for it If you have previously seen the population or community, do you think there is now more? less? about the same amount as before? or no way to compare .

General description. Please provide a description or "word picture" of the area where this occurrence is located (i.e., the physical setting and ecological context), including habitat, dominant plant species, topography, hydrology, soils, adjacent communities, and surrounding land use.

For animals: Estimated total no. of individuals in population: _____ Basis? _____ Age structure _____

Ecological & behavioral notes (e.g. reproductive stage, activity type [feeding, flying, nesting, etc.]): _____

For plants: Flowering? Yes No Fruiting? Yes No In bud? Yes No In leaf? Yes No Dormant? Yes No

For communities: For each of three strata (tree, shrub, and ground layers), please list the dominant species comprising the stratum, together with an estimate of the height and percent cover for each stratum. (use the back of this form or another sheet, if necessary, to list additional species)

Stratum height % cover Species

Stratum	height	% cover	Species
Tree			
Shrub			
Ground			

Describe species dominance relationships, vegetation heterogeneity, succession stage/dynamics, and any other unique aspects of the community or additional noteworthy species (including animals).

MANAGEMENT

Owner of site (if known): _____

Is the owner or manager protecting or managing the property for this species or community? Yes No Don't know

Are there disturbances or threats (e. g., urban development, agriculture, vehicle use, forestry, logging, fire suppression, ditching/drainage, impoundment, exotic species, and natural disturbance) in the vicinity of the site? Yes No Don't know

If so, please describe type and severity: _____

Is there evidence (e.g., fire breaks, scorching) of the use of fire at the site? Yes No Don't know Describe and give dates of recent fires, if known _____

Comments on management history or needs: _____

OTHER

Additional comments concerning the population or community, its ecological conditions, contact information for other knowledgeable people, etc.:

Appendix B

CATEGORY II (continued)

Scientific Name**	Common Name	Gov. List	Zone
<i>Tradescantia spathacea</i> (<i>Rhoeo spathacea</i> , <i>Rhoeo discolor</i>)	oyster plant		C, S
<i>Tribulus cistoides</i>	puncture vine, burr-nut		N, C, S
<i>Vitex trifolia</i>	simple-leaf chaste tree		C, S
<i>Washingtonia robusta</i>	Washington fan palm		C, S
<i>Wisteria sinensis</i>	Chinese wisteria		N, C
<i>Xanthosoma sagittifolium</i>	malanga, elephant ear		N, C, S

Recent changes to plant names

Old Name	New Name
<i>Aleurites fordii</i>	<i>Vernicia fordii</i>
<i>Aristolochia littoralis</i>	<i>Aristolochia elegans</i>
<i>Brachiaria mutica</i>	<i>Urochloa mutica</i>
<i>Hibiscus tiliaceus</i>	<i>Talipariti tiliaceus</i>
<i>Macfadyena unguis-cati</i>	<i>Dolichandra unguis-cati</i>
<i>Melaleuca viminialis</i>	<i>Callistemon viminialis</i>
<i>Panicum maximum</i>	<i>Urochloa maxima</i>
<i>Phymatosorus scolopendria</i>	<i>Microsorium grossum</i>
<i>Sapium sebiferum</i>	<i>Triadica sebifera</i>
<i>Wedelia trilobata</i>	<i>Sphagneticola trilobata</i>

Current nomenclature can be found at
florida.plantatlas.usf.edu

**Plant names are those published in "Guide to Vascular Plants of Florida Third Edition." Richard P. Wunderlin and Bruce F. Hansen. University of Florida Press. 2011. Plant names in parentheses are synonyms or misapplied names that have commonly occurred in the literature and/or indicate a recent name change. Not all synonyms are listed.

For more information on invasive exotic plants, including links to related web pages, visit
www.fleppc.org

FLEPPC List Definitions: **Exotic** – a species introduced to Florida, purposefully or accidentally, from a natural range outside of Florida. **Native** – a species whose natural range includes Florida. **Naturalized exotic** – an exotic that sustains itself outside cultivation (it is still exotic; it has not "become" native). **Invasive exotic** – an exotic that not only has naturalized, but is expanding on its own in Florida native plant communities.

Abbreviations: Government List (Gov. List): Possession, propagation, sale, and/or transport of these plants is regulated by: F=Florida Department of Agriculture and Consumer Services; U=United States Department of Agriculture

Zone: N = north, **C** = central, **S** = south, referring to each species' general distribution in regions of Florida (not its potential range in the state). Please refer to the adjacent map.



Citation example

FLEPPC. 2017. List of Invasive Plant Species. Florida Exotic Pest Plant Council. Internet: www.fleppc.org

Daniel F. Austin and Daniel B. Ward

Daniel F. Austin (2015) and Daniel B. Ward (2016) recently passed away. Both Dans were instrumental in maintaining, managing, and providing insight into Florida's many invasive plants. They first volunteered for this effort before it was even formalized as the FLEPPC, participating from that beginning through retirement. Their sage comments and wit are missed.

The 2017 list was prepared by the FLEPPC Plant List Committee

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Richard P. Wunderlin, Professor Emeritus, University of South Florida, Institute for Systematic Botany, rwunder@usf.edu

Florida Exotic Pest Plant Council's 2017 List of Invasive Plant Species

The mission of the **Florida Exotic Pest Plant Council** is to support the management of invasive exotic plants in Florida's natural areas by providing a forum for the exchange of scientific, educational and technical information.
www.fleppc.org

Note: The FLEPPC List of Invasive Plant Species is not a regulatory list. Only those plants listed as Federal Noxious Weeds, Florida Noxious Weeds, Florida Prohibited Aquatics Plants, or in local ordinances are regulated by law.

Purpose of the List

To provide a list of plants determined by the Florida Exotic Pest Plant Council to be invasive in natural areas of Florida and to routinely update the list based on information of newly identified occurrences and changes in distribution over time. Also, to focus attention on –

- the adverse effects exotic pest plants have on Florida's biodiversity and native plant communities,
- the habitat losses in natural areas from exotic pest plant infestations,
- the impacts on endangered species via habitat loss and alteration,
- the need for pest-plant management,
- the socio-economic impacts of these plants (e.g., increased wildfires or flooding in certain areas),
- changes in the severity of different pest plant infestations over time,
- providing information to help managers set priorities for research and control programs.



www.fleppc.org

CATEGORY I

Invasive exotics that are altering native plant communities by displacing native species, changing community structures or ecological functions, or hybridizing with natives. *This definition does not rely on the economic severity or geographic range of the problem, but on the documented ecological damage caused.*

Scientific Name**	Common Name	Gov. List	Zone	Scientific Name**	Common Name	Gov. List	Zone
<i>Abrus precatorius</i>	rosary pea	F	C, S	<i>Melinis repens</i>	Natal grass	N, C, S	
<i>Acacia auriculiformis</i>	earleaf acacia		C, S	<i>(Rhynchelytrum repens)</i>			
<i>Albizia julibrissin</i>	mimosa, silk tree		N, C	<i>Microstegium vimineum*</i>	Japanese stiltgrass,		N
<i>Albizia lebbek</i>	woman’s tongue		C, S	<i>Mimosa pigra</i>	catclaw mimosa	F, U	C, S
<i>Ardisia crenata</i>	coral ardisia	F	N, C, S	<i>Nandina domestica</i>	nandina, heavenly bamboo		N, C
<i>Ardisia elliptica</i>	shoebutton ardisia	F	C, S	<i>Nephrolepis brownii</i>	Asian sword fern		C, S
<i>Asparagus aethiopicus</i> (<i>A. sprengeri</i> , <i>A. densiflorus</i>)	asparagus-fern		N, C, S	<i>(N. multiflora)</i>			
<i>Bauhinia variegata</i>	orchid tree		C, S	<i>Nephrolepis cordifolia</i>	sword fern		N, C, S
<i>Bischofia javanica</i>	bishopwood		C, S	<i>Neyraudia reynaudiana</i>	Burma reed	F	S
<i>Calophyllum antillanum</i> (<i>C. calaba</i>)	Santa Maria, mast wood		S	<i>Nymphoides cristata</i>	crested floating heart	F	C, S
<i>Casuarina equisetifolia</i>	Australian-pine	F	N, C, S	<i>Paederia cruddasiana</i>	sewer vine	F	S
<i>Casuarina glauca</i>	suckering Australian-pine	F	C, S	<i>Paederia foetida</i>	skunk vine	F	N, C, S
<i>Cinnamomum camphora</i>	camphor tree		N, C, S	<i>Panicum repens</i>	torpedo grass		N, C, S
<i>Colocasia esculenta</i>	wild taro		N, C, S	<i>Pennisetum purpureum</i>	Napier grass, elephant grass		N, C, S
<i>Colubrina asiatica</i>	lather leaf	F	S	<i>Phymatosorus scolopendria</i> (<i>Microsorium grossum</i>)	serpent fern, wart fern		S
<i>Cupaniopsis anacardioides</i>	carrotwood	F	C, S	<i>Pistia stratiotes</i>	water-lettuce	F	N, C, S
<i>Deparia petersenii</i>	Japanese false spleenwort		N, C	<i>Psidium cattleianum</i> (<i>P. littorale</i>)	strawberry guava		C, S
<i>Dioscorea alata</i>	winged yam	F	N, C, S	<i>Psidium guajava</i>	guava		C, S
<i>Dioscorea bulbifera</i>	air-potato	F	N, C, S	<i>Pueraria montana</i> var. <i>lobata</i>	kudzu	F	N, C, S
<i>Eichhornia crassipes</i>	water-hyacinth	F	N, C, S	<i>Rhodomyrtus tomentosa</i>	downy rose-myrtle		C, S
<i>Eugenia uniflora</i>	Surinam cherry		C, S	<i>Ruellia simplex</i> ²	Mexican-petunia		N, C, S
<i>Ficus microcarpa</i> (<i>F. nitida</i> and <i>F. retusa</i> var. <i>nitida</i>) ¹	laurel fig		C, S	<i>Salvinia minima</i>	water spangles		N, C, S
<i>Hydrilla verticillata</i>	hydrilla	F, U	N, C, S	<i>Sapium sebiferum</i> (<i>Triadica sebifera</i>)	popcorn tree, Chinese tallow tree		N, C, S
<i>Hygrophila polysperma</i>	green hygro	F, U	N, C, S	<i>Scaevola taccada</i> (<i>S. sericea</i> , <i>S. frutescens</i>)	half-flower, beach naupaka		N, C, S
<i>Hymenachne amplexicaulis</i>	West Indian marsh grass		N, C, S	<i>Schefflera actinophylla</i> (<i>Brassaia actinophylla</i>)	schefflera, Queensland umbrella tree		C, S
<i>Imperata cylindrica</i>	cogon grass	F, U	N, C, S	<i>Schinus terebinthifolius</i>	Brazilian-pepper	F	N, C, S
<i>Ipomoea aquatica</i>	water-spinach	F, U	C	<i>Scleria lacustris</i>	Wright’s nutrush		C, S
<i>Jasminum dichotomum</i>	Gold Coast jasmine		C, S	<i>Senna pendula</i> var. <i>glabrata</i>	Christmas cassia, Christmas senna		C, S
<i>Jasminum fluminense</i>	Brazilian jasmine		C, S	<i>Solanum tampicense</i>	wetland nightshade	F, U	C, S
<i>Lantana camara</i> (<i>L. strigocamara</i>)	lantana, shrub verbena		N, C, S	<i>Solanum viarum</i>	tropical soda apple	F, U	N, C, S
<i>Ligustrum lucidum</i>	glossy privet		N, C	<i>Sporobolus jacquemontii</i> (<i>S. indicus</i> var. <i>pyramidalis</i>)	West Indian dropseed		C, S
<i>Ligustrum sinense</i>	Chinese privet	F ³	N, C, S	<i>Syngonium podophyllum</i>	arrowhead vine		N, C, S
<i>Lonicera japonica</i>	Japanese honeysuckle		N, C, S	<i>Syzygium cumini</i>	Java-plum		C, S
<i>Ludwigia hexapetala</i>	Uruguay waterprimrose		N, C	<i>Tectaria incisa</i>	incised halberd fern		S
<i>Ludwigia peruviana</i>	Peruvian primrosewillow		N, C, S	<i>Thelypteris opulenta*</i>	jeweled maiden fern		S
<i>Lumnitzera racemosa</i>	black mangrove		S	<i>Thespesia populnea</i>	seaside mahoe		C, S
<i>Luziola subintegra</i>	tropical American watergrass		S	<i>Tradescantia fluminensis</i>	small-leaf spiderwort		N, C
<i>Lygodium japonicum</i>	Japanese climbing fern	F	N, C, S	<i>Urena lobata</i>	Caesar’s weed		N, C, S
<i>Lygodium microphyllum</i>	Old World climbing fern	F, U	N, C, S	<i>Urochloa mutica</i> (<i>Brachiaria mutica</i>)	para grass		N, C, S
<i>Macfadyena unguis-cati</i> (<i>Dolichandra unguis-cati</i>)	catclawvine		N, C, S	<i>Vitex rotundifolia</i>	beach vitex		N
<i>Manilkara zapota</i>	sapodilla		S				
<i>Melaleuca quinquenervia</i>	melaleuca, paper bark	F, U	C, S				

¹Does not include *Ficus microcarpa* subsp. *fuyuensis*, which is sold as “Green Island Ficus”

²Many names are applied to this species in Florida because of a complicated taxonomic and nomenclatural history. Plants cultivated in Florida, all representing the same invasive species, have in the past been referred to as *Ruellia brittoniana*, *R. tweediana*, *R. caerulea*, and *R. simplex*.

³Chinese privet is a FLDACS Noxious Weed except for the cultivar ‘Variegatum’

**Added to the FLEPPC List of Invasive Plant Species in 2017

*Plant names are those published in “Guide to Vascular Plants of Florida Third Edition.” Richard P. Wunderlin and Bruce F. Hansen. University of Florida Press. 2011. Plant names in parentheses are synonyms or misapplied names that have commonly occurred in the literature or indicate a recent name change. Not all synonyms are listed.

CATEGORY II

Invasive exotics that have increased in abundance or frequency but have not yet altered Florida plant communities to the extent shown by Category I species. *These species may become ranked Category I if ecological damage is demonstrated.*

Scientific Name**	Common Name	Gov. List	Zone	Scientific Name**	Common Name	Gov. List	Zone
<i>Adenanthera pavonina</i>	red sandalwood		S	<i>Landoltia punctata</i>	spotted duckweed		N, C, S
<i>Agave sisalana</i>	sisal hemp		C, S	<i>Leucaena leucocephala</i>	lead tree	F	N, C, S
<i>Aleurites fordii</i> (<i>Vernicia fordii</i>)	tung-oil tree		N, C	<i>Limnophila sessiliflora</i>	Asian marshweed	F, U	N, C, S
<i>Alstonia macrophylla</i>	devil tree		S	<i>Livistona chinensis</i>	Chinese fan palm		C, S
<i>Alternanthera philoxeroides</i>	alligator-weed	F	N, C, S	<i>Macroptilium lathyroides</i>	phasey bean		N, C, S
<i>Antigonon leptopus</i>	coral vine		N, C, S	<i>Melia azedarach</i>	Chinaberry		N, C, S
<i>Ardisia japonica</i>	Japanese ardisia		N	<i>Melinis minutiflora</i>	molasses grass		C, S
<i>Aristolochia littoralis</i> (<i>A. elegans</i>)	elegant Dutchman’s pipe, calico flower		N, C, S	<i>Merremia tuberosa</i>	wood-rose		C, S
<i>Asystasia gangetica</i>	Ganges primrose		C, S	<i>Mikania micrantha</i>	mile-a-minute vine	F, U	S
<i>Begonia cucullata</i>	wax begonia		N, C, S	<i>Momordica charantia</i>	balsam apple		N, C, S
<i>Broussonetia papyrifera</i>	paper mulberry		N, C, S	<i>Murraya paniculata</i>	orange-jessamine		S
<i>Bruguiera gymnorhiza</i>	large-leaved mangrove		S	<i>Myriophyllum spicatum</i>	Eurasian water-milfoil	F	N, C, S
<i>Callistemon viminalis</i> (<i>Melaleuca viminalis</i>)	bottlebrush		C, S	<i>Panicum maximum</i> (<i>Urochloa maxima</i>)	Guinea grass		N, C, S
<i>Callisia fragrans</i>	inch plant, spironema		C, S	<i>Passiflora biflora</i>	two-flowered passion vine		S
<i>Casuarina cunninghamiana</i>	Australian-pine	F	C, S	<i>Pennisetum setaceum</i>	green fountain grass		S
<i>Cecropia palmata</i>	trumpet tree		S	<i>Pennisetum polystachion*</i> (<i>Cenchrus polystachos</i>)	mission grass, West Indian Pennisetum		C, S
<i>Cestrum diurnum</i>	day jessamine		C, S	<i>Phoenix reclinata</i>	Senegal date palm		C, S
<i>Chamaedorea seifrizii</i>	bamboo palm		S	<i>Phyllostachys aurea</i>	golden bamboo		N, C
<i>Clematis terniflora</i>	Japanese clematis		N, C	<i>Pittosporum pentandrum</i>	Taiwanese cheesewood		S
<i>Cocos nucifera</i>	coconut palm		S	<i>Platyserium bifurcatum*</i>	common staghorn fern		S
<i>Crassocephalum crepidioides</i>	redflower ragleaf, Okinawa spinach		C, S	<i>Praxelis clematidea</i>	praxelis		C
<i>Cryptostegia madagascariensis</i>	rubber vine		C, S	<i>Pteris vittata</i>	Chinese brake fern		N, C, S
<i>Cyperus involucratus</i> (<i>C. alternifolius</i>)	umbrella plant		C, S	<i>Ptychosperma elegans</i>	solitaire palm		S
<i>Cyperus prolifer</i>	dwarf papyrus		C, S	<i>Richardia grandiflora</i>	large flower Mexican clover		N, C, S
<i>Dactyloctenium aegyptium</i>	Durban crowfoot grass		N, C, S	<i>Ricinus communis</i>	castor bean		N, C, S
<i>Dalbergia sissoo</i>	Indian rosewood, sissoo		C, S	<i>Rotala rotundifolia</i>	roundleaf toothcup, dwarf Rotala, redweed		S
<i>Elaeagnus pungens</i>	silverthorn, thorny olive		N, C	<i>Ruellia blechum</i> (<i>Blechum brownei</i>)	green shrimp plant, Browne’s blechum		N, C, S
<i>Elaeagnus umbellata</i>	silverberry, autumn olive		N	<i>Sansevieria hyacinthoides</i>	bowstring hemp		C, S
<i>Epipremnum pinnatum</i> cv. <i>Aureum</i>	pothos		C, S	<i>Sesbania punicea</i>	rattlebox		N, C, S
<i>Eulophia graminea</i>	Chinese crown orchid		C, S	<i>Sida planicaulis*</i>	mata-pasto		C, S
<i>Ficus altissima</i>	false banyan, council tree		S	<i>Solanum diphyllum</i>	two-leaf nightshade		N, C, S
<i>Flacourtia indica</i>	governor’s plum		S	<i>Solanum torvum</i>	turkeyberry	F, U	N, C, S
<i>Hemarthria altissima</i>	limpo grass		C, S	<i>Spermocoe verticillata</i>	shrubby false buttonweed		C, S
<i>Heteropterys brachiata</i>	red wing, Beechey’s withe		S	<i>Sphagneticola trilobata</i> (<i>Wedelia trilobata</i>)	wedelia, creeping oxeye		N, C, S
<i>Hyparrhenia rufa</i>	jaragua		N, C, S	<i>Stachytarpheta cayennensis</i> (<i>S. urticifolia</i>)	nettle-leaf porterweed		S
<i>Ipomoea carnea</i> ssp. <i>fistulosa</i> (<i>I. fistulosa</i>)	shrub morning-glory	F	C, S	<i>Syagrus romanzoffiana</i> (<i>Arecastrum romanzoffianum</i>)	queen palm		C, S
<i>Kalanchoe x houghtonii*</i>	mother-of-millions		N, C, S	<i>Syzygium jambos</i>	Malabar plum, rose-apple		N, C, S
<i>Kalanchoe pinnata</i> (<i>Bryophyllum pinnatum</i>)	life plant		C, S	<i>Talipariti tiliaceum</i> (<i>Hibiscus tiliaceus</i>)	mahoe, sea hibiscus		C, S
<i>Koelreuteria elegans</i>	flamegold tree		C, S	<i>Terminalia catappa</i>	tropical-almond		C, S
				<i>Terminalia muelleri</i>	Australian-almond		C, S

continued

Appendix C

This document prepared by:
Ann J. Wild
Florida Communities Trust
Department of Community Affairs
2740 Centerview Drive
Tallahassee, FL 32399

FLORIDA COMMUNITIES TRUST
P2A AWARD# 92-012-P2A
FCT Contract# 96-CT-35-92-2A-51-012

GRANT AWARD AGREEMENT

THIS AGREEMENT is entered into this 27 day of October, 1995, by and between the FLORIDA COMMUNITIES TRUST ("FCT"), a nonregulatory agency within the State of Florida Department of Community Affairs, and CHARLOTTE COUNTY, a political subdivision of the State of Florida ("FCT Recipient"), in order to impose terms, conditions, and restrictions on the use of the proceeds of certain bonds, hereinafter described, and the lands acquired with such proceeds and as described in Exhibit "A" attached hereto and made a part hereof ("Project Site"), as shall be necessary to ensure compliance with applicable Florida Law and federal income tax law and to otherwise implement provisions of Chapters 253, 259, and 380, Florida Statutes.

WHEREAS, Part III Chapter 380, Florida Statutes, the Florida Communities Trust Act, creates a nonregulatory agency within the Department of Community Affairs, which will assist local governments in bringing into compliance and implementing the conservation, recreation and open space, and coastal elements of their comprehensive plans and in otherwise conserving natural resources and resolving land use conflicts by providing financial assistance to local governments to carry out projects and activities authorized by the Florida Communities Trust Act;

WHEREAS, Section 1 of the Florida Preservation 2000 Act provides for the distribution of ten percent (10%) of the net Preservation 2000 Revenue Bond proceeds to the Department of Community Affairs to provide land acquisition grants and loans to local governments through the FCT;

WHEREAS, the Governor and Cabinet authorized the sale and issuance of State of Florida Department of Natural Resources Preservation 2000 Revenue Bonds ("Bonds");

WHEREAS, the Bonds were issued as tax-exempt bonds, meaning that the interest on the Bonds is excluded from the gross income of Bondholders for federal income tax purposes;

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EXHIBIT "B"

OR BOOK 1430 PAGE 0910

WHEREAS, Rule 9K-4.010(2)(f), F.A.C., authorizes FCT to impose conditions for funding on those FCT applicants whose projects have been selected for funding in accordance with Rule Chapter 9K-4, F.A.C.;

WHEREAS, the FCT has approved the terms under which the Project Site is acquired and the deed whereby the FCT Recipient acquires title to the Project Site shall contain such covenants and restrictions as are sufficient to ensure that the use of the Project Site at all times complies with Section 375.051, Florida Statutes and Section 9, Article XII of the State Constitution and shall contain clauses providing for the conveyance of title to the Project Site to the Board of Trustees of the Internal Improvement Trust Fund upon the failure of the FCT Recipient to use the Project Site acquired thereby for such purposes; and

WHEREAS, such covenants and restrictions shall be imposed by an agreement which shall describe with particularity the real property which is subject to the agreement and shall be recorded in the county in which the real property is located; and

WHEREAS, the purpose of this Agreement is to set forth the covenants and restrictions that are imposed on the Project Site subsequent to its acquisition with the FCT Preservation 2000 Bond award.

NOW THEREFORE, in consideration of the mutual covenants and undertakings set forth herein, and other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, FCT and FCT Recipient do hereby contract and agree as follows:

I. GENERAL CONDITIONS.

1. Upon execution and delivery by the parties hereto, the FCT Recipient shall cause this Agreement to be recorded and filed in the official public records of Charlotte County, Florida, as Exhibit "B" of the warranty deed vesting fee simple title to the Project Site in the FCT Recipient, and in such manner and in such other places as FCT may reasonably request, and shall pay all fees and charges incurred in connection therewith.

2. The FCT Recipient and FCT agree that the State of Florida Department of Environmental Protection will forward this Agreement to Department of Environmental Protection Bond Counsel for review. In the event Bond Counsel opines that an amendment is required to this Agreement so that the tax exempt status of the Preservation 2000 Bonds is not jeopardized, FCT and FCT Recipient shall amend the Agreement accordingly.

3. This Agreement may be amended at any time. Any

amendment must be set forth in a written instrument and agreed to by both the FCT Recipient and FCT.

4. This Agreement and the covenants and restrictions contained herein shall run with the Property herein described and shall bind, and the benefits shall inure to, respectively, the FCT and the FCT Recipient and their respective successors and assigns.

5. This Agreement shall be governed by and construed in accordance with the laws of the State of Florida, with respect to both substantive rights and with respect to procedures and remedies.

6. Any notice required to be given hereunder shall be given by personal delivery, by registered mail or by registered expedited service at the addresses specified below or at such other addresses as may be specified in writing by the parties hereto, and any such notice shall be deemed received on the date of delivery if by personal delivery or expedited delivery service, or upon actual receipt if sent by registered mail.

FCT: Florida Communities Trust
Department of Community Affairs
2740 Centerview Drive
Tallahassee, FL 32399-2100
ATTN: Executive Director

FCT Recipient: Charlotte County
18500 Murdock Circle
Port Charlotte, FL 33948-1094
ATTN: _____

7. If any provision of the Agreement shall be invalid, illegal or unenforceable, the validity, legality and enforceability of the remaining provisions shall not in any way be affected or impaired.

II. PROJECT SITE REQUIREMENTS IMPOSED BY CHAPTER 259, CHAPTER 375, AND CHAPTER 380, PART III, FLORIDA STATUTES.

1. If any essential term or condition of this grant agreement is violated by the FCT Recipient or by some third party with the knowledge of the FCT Recipient and the FCT Recipient does not correct the violation within 30 days of notice of the violation, fee simple title to all interest in the Project Site shall be conveyed to the Board of Trustees of the Internal Improvement Trust Fund. The FCT shall treat such property in accordance with Section 380.508(4)(e), Florida Statutes.

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2. Any transfer of the Project Site shall be subject to the approval of FCT and FCT shall enter into a new agreement with the transferee, containing such covenants, clauses, or other restrictions as are sufficient to protect the interest of the people of Florida.

3. The interest, if any, acquired by the FCT Recipient in the Project Site will not serve as security for any debt of the FCT Recipient unless FCT approves the transaction.

4. If the existence of the FCT Recipient terminates for any reason, title to all interest in real property it has acquired with the FCT award shall be conveyed to the Board of Trustees of the Internal Improvement Trust Fund, unless FCT negotiates an agreement with another local government or nonprofit organization which agrees to accept title to all interest in and to manage the Project Site.

5. In the event that the Project Site is damaged or destroyed or title to the Project Site, or any part thereof, is taken by any governmental body through the exercise or the threat of the exercise of the power of eminent domain, the FCT Recipient shall deposit with the FCT any insurance proceeds or any condemnation award, and shall promptly commence to rebuild, replace, repair or restore the Project Site in such manner as is consistent with the Agreement. The FCT shall make any such insurance proceeds or condemnation award moneys available to provide funds for such restoration work. In the event that the FCT Recipient fails to commence or to complete the rebuilding, repair, replacement or restoration of the Project Site after notice from the FCT, the FCT shall have the right, in addition to any other remedies at law or in equity, to repair, restore, rebuild or replace the Project Site so as to prevent the occurrence of a default hereunder.

Notwithstanding any of the foregoing, FCT will have the right to seek specific performance of any of the covenants and restrictions of this Agreement concerning the construction and operation of the Project Site.

III. PROJECT SITE OBLIGATIONS IMPOSED BY FCT ON THE FCT RECIPIENT.

1. The Project Site shall be managed only for the conservation, protection and enhancement of natural and historical resources and for passive, natural resource-based public outdoor recreation which is compatible with the conservation, protection and enhancement of the Project Site, along with other related uses necessary for the accomplishment of this purpose. The proposed uses for the Project Site are specifically designated in the Project Plan as approved by FCT.

2. The FCT Recipient shall prepare and submit to FCT an annual report as required by Rule 9K-4.013, F.A.C.

3. The FCT Recipient shall ensure that the future land use designation assigned to the Project Site is for a category dedicated to open space, conservation, or outdoor recreation uses as appropriate. If an amendment to the FCT Recipient's comprehensive plan is required to comply with this paragraph, the amendment shall be proposed at the next comprehensive plan amendment cycle available to the FCT Recipient.

4. FCT Recipient shall ensure, and provide evidence thereof to FCT, that all activities under this Agreement comply with all applicable local, state, regional and federal laws and regulations, including zoning ordinances and the adopted and approved comprehensive plan for the jurisdiction as applicable. Evidence shall be provided to FCT that all required licenses and permits have been obtained prior to the commencement of any construction.

5. The FCT Recipient shall, through its agents and employees, prevent the unauthorized use of the Project Site or any use thereof not in conformity with the FCT approved project plan.

6. FCT staff or its duly authorized representatives shall have the right at any time to inspect the Project Site and the operations of the FCT Recipient at the Project Site.

7. All buildings, structures, improvements, and signs shall require the prior written approval of FCT as to purpose. Further, tree removal, other than non-native species, and/or major land alterations shall require the written approval of FCT. The approvals required from FCT shall not be unreasonably withheld by FCT upon sufficient demonstration that the proposed structures, buildings, improvements, signs, vegetation removal or land alterations will not adversely impact the natural resources of the Project Site. The approval by FCT of the FCT Recipient's management plan addressing the items mentioned herein shall be considered written approval from FCT.

8. If archaeological and historic sites are located on the Project Site, the FCT Recipient shall comply with Chapter 267, Florida Statutes. The collection of artifacts from the Project Site or the disturbance of archaeological and historic sites on the Project Site will be prohibited unless prior written authorization has been obtained from the Department of State, Division of Historical Resources.

9. The FCT Recipient shall ensure that the Project Site is identified as being publicly owned and operated as a natural

resource-based public outdoor recreational site in all signs, literature and advertising regarding the Project Site. The FCT Recipient shall erect a sign(s) identifying the Project Site as being open to the public and as having been purchased with funds from FCT and FCT Recipient.

IV. OBLIGATIONS INCURRED BY FCT RECIPIENT AS A RESULT OF BOND PROCEEDS BEING UTILIZED TO PURCHASE THE PROJECT SITE.

1. If the Project Site is to remain subject, after its acquisition by the State and the FCT Recipient, to any of the below listed activities or interests, the FCT Recipient shall provide at least 60 days written notice of any such activity or interest to FCT prior to the activity taking place, and shall provide to FCT such information with respect thereto as FCT reasonably requests in order to evaluate the legal and tax consequences of such activity or interest:

a. any lease of any interest in the Project Site to a non-governmental person or organization;

b. the operation of any concession on the Project Site to a non-governmental person or organization;

c. any sales contract or option to buy things attached to the Project Site to be severed from the Project Site, with a non-governmental person or organization;

d. any use of the Project Site by non-governmental persons other than in such person's capacity as a member of the general public;

e. a management contract of the Project Site with a non-governmental person or organization; and

f. such other activity or interest as may be specified from time to time in writing by FCT to the FCT Recipient.

2. FCT Recipient agrees and acknowledges that the following transaction, events, and circumstances may not be permitted on the Project Site as they may have negative legal and tax consequences under Florida law and federal income tax law:

a. a sale of the Project Site or a lease of the Project Site to a non-governmental person or organization;

b. the operation of a concession on the Project Site by a non-governmental person or organization;

c. a sale of things attached to the Project Site to be severed from the Project Site to a non-governmental person or organization;

d. any change in the character or use of the Project Site from that use expected at the date of the issuance of any series of bonds from which the disbursement is to be made;

e. any use of the Project Site by non-governmental persons other than in such person's capacity as a member of the general public;

f. a management contract of the Project Site with a non-governmental person or organization; and

g. such other activity or interest as may be specified from time to time in writing by FCT to the FCT Recipient.

DELEGATIONS AND CONTRACTUAL ARRANGEMENTS BETWEEN THE FCT RECIPIENT AND OTHER GOVERNMENTAL BODIES, NOT FOR PROFIT ENTITIES, OR NON GOVERNMENTAL PERSONS FOR USE OR MANAGEMENT OF THE PROJECT SITE WILL IN NO WAY RELIEVE THE FCT RECIPIENT OF THE RESPONSIBILITY TO ENSURE THAT THE CONDITIONS IMPOSED HEREIN ON THE PROJECT SITE AS A RESULT OF UTILIZING BOND PROCEEDS TO ACQUIRE THE PROJECT SITE ARE FULLY COMPLIED WITH BY THE CONTRACTING PARTY.

V. CONDITIONS THAT ARE PARTICULAR TO THE PROJECT SITE AS A RESULT OF THE FCT APPROVED MANAGEMENT PLAN.

1. Outdoor recreational facilities including nature trails, boardwalks, and an observation platform shall be provided on the Project Site. The facilities shall be developed in a manner that allows the public reasonable access for observation and appreciation of the natural resources on the Project Site without causing harm to those resources.

2. The timing and extent of a vegetative survey of vegetative communities and plant species on the Project Site shall be specified in the management plan. The FCT Recipient shall detail how the survey shall be used during development of the site to insure the protection, restoration, and preservation of the natural resources on the Project Site.

3. The pine flatwood, xeric oak, saltwater marsh, and seagrass communities that occur on the Project Site shall be preserved and appropriately managed to ensure the long-term viability of these vegetative communities.

4. The Project Site shall be managed in a manner that will optimize habitat conditions for the listed wildlife species that utilize or could potentially utilize the Project Site, particularly gopher tortoises and scrub jays. The FCT Recipient shall coordinate with the Game and Fresh Water Fish Commission on the management of the Project Site for the protection of listed species and listed species habitat. The FCT Recipient shall conduct periodic surveys of listed species using the Project Site.

5. The water quality of Tippecanoe Creek shall be protected and the natural hydrology of the Project Site shall be preserved and restored to a more natural hydrological regime and shall include the restoration of the areas adjacent to the drainage canals. The FCT Recipient shall coordinate with the Southwest Florida Water Management District on the restoration and management of hydrological regime on the Project Site.

6. The FCT Recipient shall initiate a monitoring plan for the stormwater holding ponds and other stormwater runoff from the baseball complex to insure that these adjacent activities have no detrimental impact to the resources on the Project Site.

7. A vegetation analysis of the Project Site shall be performed to determine which areas of the Project Site need a prescribed burning regime implemented to maintain natural fire-dependent vegetative communities. The FCT Recipient shall coordinate with Division of Forestry and Game and Fresh Water Fish Commission on the development of a prescribed burn plan for the Project Site.

8. Invasive exotic vegetation that occurs on the Project Site shall be eradicated and shall be replaced with native species.

9. The FCT Recipient shall develop and implement a feral animal removal program for the Project Site.

10. The FCT Recipient shall restore approximately 27 acres of upland in terms of biological composition and ecological function. The FCT Recipient shall restore the degraded wetland communities along the shoreline of the canal in terms of biological composition and ecological function. The restoration effort shall include the elimination of the spoil berms along Huckaby Creek.

11. The FCT Recipient shall coordinate with the Charlotte Harbor Aquatic Preserve and Charlotte Harbor Reserve on the management of the Project Site.

12. The FCT Recipient shall coordinate with the Department

of Environmental Protection in the preparation of the management plan and shall require that any proposed canoe launch facility be limited to allowing the launching of only non-motorized canoes and kayaks due to manatees using the creek and bay in the project area. The FCT Recipient shall coordinate with the Department of Environmental Protection in developing informational signs relating to protection of manatees and their habitat and shall be required to post signs stating that motorized boats are prohibited within the Project Site.

13. The FCT Recipient shall perform an archaeological survey of the Project Site prior to the commencement of any proposed development activities. All planned activities involving known archaeological sites or identified site areas shall be closely coordinated with the Department of State, Division of Historic Resources in order to prevent the disturbance of significant sites.

THIS GRANT AWARD AGREEMENT embodies the entire Agreement between the parties.

IN WITNESS WHEREOF, the parties hereto have duly executed this Agreement.

Witness:

CHARLOTTE COUNTY, a political subdivision of the State of Florida

Brenda Cesario
Print Name:

BY: Matthew D. DeBoer
Its: Matthew D. DeBoer, Chairman

BEVERLY A. BOWMAN
Print Name:

Date: 10/25/95
Barbara T. Scott, Clerk of Circuit Court and
Ex-officio Clerk to the Board of County Commissioners
Attest: Barbara T. Scott
Clerk

Accepted as to Legal Form and Sufficiency:

Renee Francis Lee
Date: 10/16/95
Renee Francis Lee, County Attorney

OR BOOK 1430 PAGE 0918

FLORIDA COMMUNITIES TRUST

Janice D. Dushni
Print Name: JANICE D. DUSHNI

Linda Moyer
Print Name: Linda Moyer

David Jordan
James F. Murley, Chair

Date: 10/27/95

Accepted as to Legal Form and Sufficiency:

Ann J. Wild
Ann J. Wild, Trust Counsel

Date: 10-26-95

STATE OF FLORIDA
COUNTY OF LEON

The foregoing instrument was acknowledged before me this 27th day of October, 1995 by JAMES F. MURLEY, as Chair of the Florida Communities Trust. He is personally known to me.

David Jordan



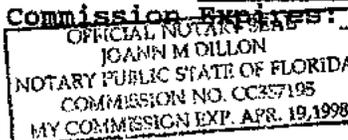
JANICE D. DUSHNI
MY COMMISSION # CC 245713 EXPIRES
December 10, 1996
BONDED THRU TROY FARM INSURANCE, INC.

Janice D. Dushni
Notary Public
Print Name: _____
Commission No. _____
My Commission Expires: _____

STATE OF FLORIDA
COUNTY OF CHARLOTTE

The foregoing instrument was acknowledged before me this 25th day of OCTOBER, 1995, by MATTHEW D. DeBOER, as CHAIRMAN. He/She is personally known to me.

Joann M. Dillon
Notary Public
Print Name: JOANN M. DILLON
Commission No. _____
My Commission Expires: _____



GAA\92-012-P2A
FIN\9-14-95

EXHIBIT "A"

A tract or parcel of land lying in Sections 14, 15, 22 and 23, Township 40 South, Range 21 East, Charlotte County, Florida being more particularly described as follows:

From the southwest corner of said Section 14 run North $00^{\circ}26'07''$ East along the west line of said Section 14 for 3,274.45 feet to an intersection with the southeasterly right-of-way line of State Road Number 771 and the Point of Beginning.

From said Point of Beginning run the following courses along said southeasterly line: North $68^{\circ}49'14''$ East for 594.82 feet; South $21^{\circ}10'46''$ East for 10.00 feet; North $68^{\circ}49'14''$ East for 620.75 feet; thence run the following courses; South $21^{\circ}14'53''$ East for 371.22 feet; South $21^{\circ}14'53''$ East for 191.67 feet to a point of curvature; thence southerly along an arc of a curve to the right of radius 565.00 feet (chord bearing South $01^{\circ}52'26''$ East) (chord 374.86 feet) (delta $38^{\circ}44'53''$) for 382.10 feet to a point of tangency; thence run South $17^{\circ}30'00''$ West for 450.00 feet; South $72^{\circ}30'00''$ East for 669.30 feet; North $52^{\circ}08'27''$ East for 1,051.16 feet; South $89^{\circ}39'02''$ East for 1,359.61 feet thence run South $00^{\circ}06'56''$ West for 175.00 feet to an intersection with the south line of said Port Charlotte Subdivision Section Forty-Six; thence run South $89^{\circ}39'02''$ East along said south line for 805.47 feet to an intersection with the northwesterly line of the Flamingo Waterway System as described in Official Records Book 1228, Pages 1727 through 1730, of said public records; thence run the following courses along said northwesterly line; South $00^{\circ}00'32''$ West for 5.29 feet to a point of curvature; southwesterly along an arc of a curve to the right of radius 600.00 feet (chord bearing South $37^{\circ}15'32''$ West) (chord 726.35 feet) (delta $74^{\circ}30'00''$) for 780.16 feet to a point of reverse curvature; southwesterly along an arc of a curve to the left of radius 3,173.36 feet (chord bearing South $61^{\circ}07'47''$ West) (chord 1,468.59 feet) (delta $26^{\circ}45'30''$) for 1,482.03 feet to a point of tangency, South $47^{\circ}45'02''$ West for 791.17 feet, leaving said northwesterly line of the Flamingo Waterway System; thence continue South $47^{\circ}45'02''$ West for 2,854.46 feet to an intersection with the northeasterly line of Parcel 15; thence run the following courses along said northeasterly line; North $76^{\circ}00'00''$ West for 877.46 feet; North $35^{\circ}00'00''$ West for 490.00 feet; North $05^{\circ}00'00''$ East for 509.99 feet to an intersection with the south line of said Section 15 and the northeasterly line of Parcel 13 as described in Official Records Book 571, Pages 1799 through 1809 of said public records; thence run the following courses along said northeasterly line; North $05^{\circ}00'00''$ East for 270.01 feet; North $65^{\circ}00'00''$ West for 405.00 feet; North $21^{\circ}00'00''$ West for 75.00 feet; North $30^{\circ}00'00''$ East for 810.00 feet; North $73^{\circ}00'00''$ West for 310.00 feet; South $32^{\circ}00'00''$ West for 365.00 feet; North $86^{\circ}00'00''$ West for 242.14 feet; North $09^{\circ}00'00''$ East for 496.22 feet; North $72^{\circ}00'00''$ West for 265.00 feet; North $21^{\circ}00'00''$ East for 300.00 feet; North $60^{\circ}00'00''$ West for 200.00 feet; South $39^{\circ}00'00''$ West for 270.00 feet; South $74^{\circ}00'00''$ West for 150.00 feet; North $42^{\circ}00'00''$ West for 370.00 feet; North $03^{\circ}00'00''$ East for 454.54 feet to an intersection with the southeasterly right-of-way line of State Road Number 771; thence North $68^{\circ}49'14''$ East along said easterly line for 2,298.52 feet to the Point of Beginning.

TITLE EXCEPTIONS

1. The rights, if any, of the public to use as a public beach or recreation area any part of the land lying between the body of water abutting the subject property and the natural line of vegetation, bluff, extreme high water line or other apparent boundary line separating the publicly used area from the upland private area.
2. Riparian rights or accretion or littoral rights, if any to the subject property are not insured.
3. If the premises herein described include artificially filled land in what was formerly navigable water, it is subject to any and all rights of the United State Government's control over navigable waters in the interest of navigation and commerce and the inalienable rights of the State of Florida in lands and/or water of such character.
4. Rights of the United State of America and/or the State of Florida to any portion of said land which lies beneath navigable waters.
5. Subject to any and all residual royalty rights of Coastal Petroleum Company, or its assigns, resulting from any agreements with the Trustees of the Internal Improvement Fund of Florida, which excludes the right of entry for purpose of exploration, mining or drilling.
6. Any adverse ownership claim by the State of Florida by right of sovereignty to any portion of the lands insured hereunder, including submerged, filled, and artificially exposed lands and lands accreted to such lands.
7. Easements to Southwest Florida Water Management District recorded in O.R. Book 696, Page 301, of the Public Records of Charlotte County, Florida.
8. Easement to Florida Power & Light Company recorded in O.R. Book 112, Page 451, of the public Records of Charlotte County, Florida.
9. Grant of Perpetual Pedestrian and Vehicular Access Easement executed by Atlantic Gulf Communities Corporation, as Grantors, in favor of Southwest Florida Water Management District and the Board of Trustees of the Internal Improvement Fund of the State of Florida, dated October 13, 1995 and recorded in O.R. Book 1427, Page 1815, of the Public Records of Charlotte County, Florida.
10. Matters depicted on Johnson Engineering, Inc. survey sketch dated October 26, 1995 under Project #20365.

EXHIBIT "C"

Appendix D

TIPPECANOE ENVIRONMENTAL PARK EAST
[Unit 4]
GOPHER TORTOISE RECIPENT SITE
MANAGEMENT PLAN



August 2011

Prepared by:



Charlotte County Community Services
Parks & Natural Resources Division
2050 Forrest Nelson Blvd.
Port Charlotte, FL 33952

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1.0 INTRODUCTION AND GOALS

Tippecanoe Environmental Park is a 354 acre environmental park located in north central Charlotte County, directly south of the Charlotte Sports Park (Figure 1). Tippecanoe is in Township 40 South, Range 21 East, Sections 13, 14, 22, and 23 of USGS Quadrangle El Jobean. Tippecanoe Environmental Park contains one of the largest continuous tracts of scrub habitat in central Charlotte County. The majority of the site is dominated by pine flatwoods, scrub scrubby flatwoods and tidal marsh. Listed species such as the Florida scrub-jay (*Aphelocoma coerulescens*), the gopher tortoise (*Gopherus polyphemus*), southeastern American Kestrel (*Falco sparverius*), and the osprey (*Pandion haliaetus*) have been observed within the park, other listed species have the potential to be present.

1.1 Land Use Compatibility

Charlotte County acquired Tippecanoe Environmental Park for preservation and outdoor passive recreation in 1995. Tippecanoe Environmental Park is managed for conservation, protection, and enhancement of its natural communities found onsite. The future land use and zoning designations were changed between 2002-2006. The final future land use designation for Tippecanoe is Resource Conservation. The final zoning designation for Tippecanoe is Environmentally Sensitive. Tippecanoe is surrounded on 3 sides by publicly owned property. The west and southeast portions of the site are boarded by the Charlotte Harbor Preserve State Park. To the east separated by a canal is Tippecanoe II Mitigation Area, a 182 acre scrub-jay mitigation preserve. To the north is SR 776 and the Charlotte Sport's Park, which is home to the Tampa Bay Rays spring training; there is no urban interface with Tippecanoe Environmental Park. There are no conflicting land uses adjacent to the project that would inhibit management of the site.

Preservation and outdoor passive recreation are the only land uses proposed for this site, therefore there would be no adverse affects from land use for the ability of gopher tortoises to excavate and maintain their burrows or to otherwise inhabit and utilize the site. The County's commitment to maintain and manage the property for the ongoing health and restoration of the natural communities found onsite will foster the open canopy and herbaceous ground cover needed by gopher tortoises.

1.2 Future Management Goals

Tippecanoe Environmental Park will be managed by Charlotte County for the conservation, protection, and enhancement of its natural resources and for compatible public recreation. It is the overall goal of Charlotte County to continue to restore and manage the park for the optimal health of each habitat and to maximize the diversity of both flora and fauna within the habitats onsite.

Priority management objectives for the gopher tortoise recipient area include:

- Focus on managing for the Gopher Tortoise as a keystone species.
- Increase suitable habitat for the Gopher Tortoise on Tippecanoe utilizing the guiding principles outlined in the Florida Fish and Wildlife Conservation Commission's (FWC) Gopher Tortoise Management Plan (September 2007).
- Increase habitat suitability for other known or potential listed species and Gopher Tortoise commensals.

1.3 Florida Communities Trust

Tippecanoe Environmental Park was acquired with grant funding from Florida Communities Trust (FCT). Charlotte County provided a 50% match from ad valorem funds, there no restrictions these funds have on the use of the property. A Management Plan (Appendix A) was written for the property in 1995 as a requirement of the FCT grant and outlines the general management activities for the park. The management plan was developed to ensure that Tippecanoe will be developed and managed in accordance with the Grant Award Agreement. An updated management plan for Tippecanoe Environmental Park is currently being drafted by County staff. Key management strategies include prescribed burns and exotic/invasive species removal. Tippecanoe is open to the public; only passive use recreation (e.g. hiking, bird watching, etc.) are allowed within the park.

2.0 SITE CONDITIONS AND NATURAL RESOURCES

An aerial map is provided as Figure 2 that delineates the property boundaries, as well as the designated management units throughout Tippecanoe. Figure 3 shows the boundary of the gopher tortoise recipient site area and delineates the management units within the recipient site.

2.1 Natural Community Types and Current Conditions

Natural communities within Tippecanoe including Xeric Hammock, Upland Hardwood Forest, Scrub, Scrubby Flatwoods, Mesic Pine Flatwoods, Wet Flatwoods, Maritime Hammock, Bottomland Forest, Salt Marsh, and Flatwoods Lake. The habitat types located within the boundaries of the gopher tortoise recipient site area are discussed below (Figure 4).

Scrubby Flatwoods

Tippecanoe contains approximately 5.32 acres of scrubby flatwoods. Like scrub, scrubby flatwoods are mostly limited to Florida; FNAI ranks scrub habitat as imperiled both in-state (S2) and globally (G2) (FNAI 2010). This ecosystem is nearly endemic to Florida, but does appear in bordering states. FNAI characterizes scrubby flatwoods by an overstory of widely spaced pines and a short, shrubby understory of saw palmetto (*Serenoa repens*), scrub oaks, wiregrass (*Aristida* spp.), rusty lyonia, lichens, and tarflower (*Bejaria racemosa*) (FNAI 2010).

The scrubby flatwoods habitat within the boundary of the gopher tortoise recipient site area is not disturbed and in fairly good condition, the unit was burned via prescribed fire to stimulate new growth and additional diversity in the herbaceous layer. Both mechanical vegetation reduction and prescribed fire will continue to be utilized to maintain this community as needed.

Mesic Pine Flatwoods

The project area contains approximately 35.38 acres of mesic pine flatwoods habitat. The Florida Natural Areas Inventory (FNAI) indicates mesic flatwoods occur throughout Florida and the lower southeastern coastal plain (FNAI 2010). FNAI characterizes mesic pine flatwoods by an open canopy of tall pines with a low ground layer of shrubs and grasses, with little to no mid-story vegetation. Scrub is found on white sandy infertile soils, groundcover, if any, consists of lichens and herbs. Common ground vegetation includes saw palmetto, gallberry (*Ilex glabra*), runner oak (*Quercus minima*), shiny blueberry (*Vaccinium myrsinites*), wiregrass (*Aristida* spp.), and broomsedge (*Andropogon* spp.) (FNAI 2010).

The mesic pine flatwoods within the boundary of the gopher tortoise recipient site area is in good condition. There was some overgrowth in especially with respect to saw palmetto due to long fire intervals, but a recent prescribed fire in the winter 2010 has improved habitat conditions. Both mechanical reduction and prescribed fire will continue to be utilized to maintain this community.

2.2 Soils

The soils at Tippecanoe are dominated by Wabasso sand, Limestone substratum and Oldsmar sand, other soils present include EauGallie sand, Felda fine sand, puckish mucky fine sand, and Pineda fine sand. Both Wabasso sand, limestone substratum and Oldsmar sand is typically associated with low broad flatwoods, along with EauGallie sand inclusions, this soil has a high water table (NRCS, 2007 and Soil Conservation Service, 1981).

The soils within the boundaries of the gopher tortoise recipient site area (Figure 5) are dominated by Wabasso sand, Limestone substratum and Oldsmar sand; these are considered neither desirable nor acceptable under the FWC's criteria for recipient sites. In addition, although the soils on the site have a higher water table than what is desirable, there has been ample documentation of tortoises utilizing the areas proposed for the recipient site.

2.3 Invasive Exotic Current Conditions

Tippecanoe Environmental Park is surrounded primarily by other conservation lands, making it slightly less susceptible to invasive nuisance species; however, dispersal by birds and other wildlife (e.g., feral hogs) as well as invasive not treated on adjacent or nearby lands can be dispersed by wind or water.

Exotic invasive species that have been observed within the overall park include Brazilian pepper, melaleuca (*Melaleuca quinquenervia*), Cesar weed, and cogongrass (*Imperata cylindrica*). These species are ranked as a Category I according to the 2005 List of Invasive Species from the Florida Exotic Pest Plant Council (FLEPPC). Despite all of the opportunities, nuisance exotic encroachment within the boundary of the gopher tortoise recipient site area is sparse. The only exotics in the recipient area are along the east line running parallel to the firebreaks.

3.0 GOPHER TORTOISE BASELINE

3.1 Tortoise Population

In 2004, Charlotte County contracted with a local non-profit agency to conduct a baseline survey for gopher tortoise at Tippecanoe Environmental Park. The survey covered between 32-100% of the best quality habitat and 32-72% of the less suitable habitat and was conducted utilizing methods from Cox (et al. 1987) and Alford (1980). Excerpts from the report pertaining to the proposed gopher tortoise recipient site area are summarized below.

There are likely two distinct gopher tortoise populations on the property. One of these potentially viable populations is located in the scrub and scrubby flatwoods of management units 1, 2, 3, and 5. Together, this area contains approximately 65 acres of suitable habitat and a population of around 32 tortoises. The demographics of this site and the proportion of abandoned (47) to active plus inactive burrows indicate that this population may be on decline and not effectively reproducing (Table 2). While unit 1 has a density of 1.17 tortoises per acre, the other three units all have densities less than 1 tortoise per acre. There are virtually no smaller tortoises represented within this population. Restoration, with mechanical thinning and prescribed burning, may result in more herbaceous regeneration and facilitate the reproduction of this population.

Table 1. Tippecanoe Environmental Park. Gopher Tortoise Survey 2004.
Population Density Estimates.

Unit	Area, ac	Surveyed ac	Suitable Habitat Surveyed, %	Total		Population/ Unit	Density/ac Suitable Habitat	Abandoned
				Active	Inactive			
2	19.15	19.15	100	9	19	17.19	0.898	17
3	8	6.8	85	1	3	2.46	0.425	12
4	59.43	23.89	54.93	2	4	3.68	0.281	7
5	43.57	23.23	71.63	1	7	4.91	0.295	7
Total	353.65	150.9	55.91	32	63	58.33	0.691	85

Notes:

Population/Unit = 0.614 X (Total Active + Total Inactive Burrows), where 0.614 = Auffenberg/Franz conversion factor

Density/ac = Number tortoises per acres suitable habitat = Population/Unit / (Surveyed ac X % Suitable Habitat Surveyed)

3.2 Baseline Survey Transects and Density Values

Initial baseline surveys were conducted within the gopher tortoise recipient site area on April 13, 2011 and May 12, 2010. A map depicting transects and burrow locations is attached as Figure 6. A summary of the data by unit follows:

	Unit 4
Total Acres	40.7
Acres Surveyed	28.4
No. Active/Inactive Burrows	52
No. Abandoned Burrows	13
% Habitat Surveyed	69%
Estimated Population	37

4.0 MANAGEMENT NEEDS AND RESTORATION

4.1 Invasive Exotic Proposed Management

All exotic invasive species are at very manageable levels, spot treatments occur when exotic invasive vegetation is observed onsite. Staff will plan an eradication treatment for the firebreak areas that currently have the mostly density, relatively speaking. Due to the small nature of exotic invasive plant infestations there are no plans for re-vegetating treatment areas. Staff will review on a case by case basis if re-vegetation is needed at the time of treatment.

Prevention is most effective method of control; staff continually monitors the sites for early detection and control of populations. Currently, efforts to eradicate these Category I species closely parallel the exotic species control plans recommended by FLEPPC. Application of the most recent treatment recommendations by species is available via the FLEPPC web site (<http://www.fleppc.org/>). The site is monitored on a regular basis, to exclusively assess the presence of invasive/exotic species (plant and animal), will be conducted.

4.2 Tree Canopy Management

Habitat management guidelines for gopher tortoises as outline in the Florida Fish and Wildlife Conservation Commission's (FWC) Gopher Tortoise Management Plan (September 2007) recommend maintaining the pine and hardwood canopy cover at 60% or less. Current canopy conditions in the proposed gopher tortoise recipient site area is approximately 20% coverage
*Note: this estimate is based on site knowledge, aerial interpretation and limited onsite verification.

To maintain the current canopy coverage of less than 60% in staff proposes to utilize an approximate 2-3 year burn cycle for potential pine dominated habitats and a slightly longer cycle in the scrub dominated habitats; however the over-riding determination of the burn cycle will be dictated by site conditions. As stated in the FWC gopher tortoise management guidelines, the general result of fire on tree and shrubs is to reduce canopy cover. This is directly tied to fostering more open grassy habitat conditions that benefit gopher tortoises.

4.3 Ground Cover Management

Habitat management guidelines for gopher tortoises as outline in the Florida Fish and Wildlife Conservation Commission's (FWC) Gopher Tortoise Management Plan (September 2007) recommend maintaining herbaceous groundcover at 30-50% or greater. Current herbaceous groundcover conditions in the proposed gopher tortoise recipient site area is approximately 30% groundcover.

*Note: these estimates are based on site knowledge, aerial interpretation and limited onsite verification.

Maintaining herbaceous groundcover of 30-50% or more is directly tied to maintaining an open canopy, as described above. In addition to maintaining an open canopy, staff proposes to utilize an approximate 2-3 year burn cycle for potential pine dominated habitats and a slightly longer cycle in the scrub dominated habitats; however the over-riding determination of the burn cycle will be dictated by site conditions. Following a 2-3 year burn cycle in the pine dominated habitats and a slightly longer cycle in the scrub dominated habitats will allow for fire to stimulate the growth and diversity of tortoise foraging. Staff will strive for early growing season burn, when weather conditions permit; this will hopefully produce a more pronounced vegetative response compared to dormant season burns.

4.4 Other Proposed Enhancement and Remedial Actions

At this time, there are no other habitat enhancements proposed. There are no areas appropriate for creating berms or spoil piles. The site is already securely fenced and restoration of the hydrology on the property was completed in 2005. If the above described management activities do not achieve the desired results, staff will re-examine the need for selective canopy thinning to further open up the canopy, re-evaluate burn cycles and burning seasons and evaluate additional forage plantings. County staff will consult with FWC for any new or update recommendations if additional remedial actions are necessary.

5.0 MONITORING

5.1 Habitat Assessment Monitoring

As required, the County will submit a monitoring report to FWC every three years. The report will summarize the habitat management conducted and the results of habitat monitoring. The guidelines regarding survey methods will be provided by FWC.

5.2 Tortoise Population Monitoring

As required, the County will submit a monitoring report to FWC every three years. The report will summarize the tortoise density surveys and monitoring. The guidelines regarding survey methods will be provided by FWC.

6.0 FUNDING SOURCES AND PRIORITY SCHEDULE

6.1 Management Funding Sources

Charlotte County will ensure adequate funding for perpetual management of the proposed gopher tortoise recipient site. Funding will come from general appropriation or allocation (ad valorem funds) approved by the Charlotte County Board of County Commissioners (BOCC) for habitat management. Dedicated ad valorem funding for habitat management from the BOCC is further supported by grant requirements for habitat management from the FCT grant that funded the acquisition of the property.

6.2 Management Cost Estimates

Management cost estimates for management of recipient site unit are broken down to a cost per acre where feasible. Some services are conducted throughout the entire park including the recipient site. County staff intends to utilize an approximate 2-3 year burn cycle; however the over-riding determination of the burn cycle will be dictated by the specific site conditions. Timing of all management activities are subject to appropriate and safe weather conditions.

- **Natural Resource Protection - \$2,630**
 - Feral animal/Exotic plant monitoring - \$1,100
 - Exotic/Feral animal removal – \$330 (\$2,900/year for entire park)
 - Periodic Exotic Species Treatment -\$1,200 per event

- Cost estimate shown is based on one treatment every other year
- Listed species survey – in house staff time
- **Resource Enhancement - \$13,640**
 - Controlled burning – \$1,040
 - One controlled burn, burn cycle estimated at every 2-4 years based on habitat conditions
 - Approximately 40 burnable acres at approximately \$26 per acre (in house cost)
 - Mechanical thinning - \$12,600
 - Cost shown is based on one treatment every other year
 - Approximately 40 acres at \$630 per acre
- **Maintenance - Total \$800**
 - Upkeep of overall park facilities (firebreaks and fencing) - \$500 annually
 - \$300 per fence repair, estimate 1 repairs per year
- **Staffing –** The Division will provide staffing, management, and maintenance for the Park. A full time Environmental Specialist will be directly responsible for all land management activities. Assistance from other Environmental Specialists and additional Department staff will be available as needed and the support of the Division Manager and other administrative positions will be available. Additional staffing may be obtained through volunteers, non-profit organizations, and/or contracted services as needed.

6.3 Schedule for Management Activities

The most recent prescribed burn was conducted in the winter of 2010. Proposed burn cycles and time frames are weather dependent and may be adjusted as needed.

Priority Schedule - Management Activities

Quarter	2011				2012				2013			
	1	2	3	4	1	2	3	4	1	2	3	4
Task												
Canopy Removal												
Exotic Species Control	Unit 4: as needed											
Prescribed Burning**	Unit 4											
Monitoring	Review if necessary											
	Unit 4 Report due to FWC											

Quarter	2014				2015				2016			
	1	2	3	4	1	2	3	4	1	2	3	4
Task												
Canopy Removal												
Exotic Species Control	Unit 4: as needed											
Prescribed Burning**	Review if necessary											
Monitoring	Unit 4											
	Unit 4: as needed											
	Unit 4 (Alt) Report due to FWC											

**weather permitting

Figure 1



 Park Boundary

Tippecanoe Environmental Park: 2010 Aerial

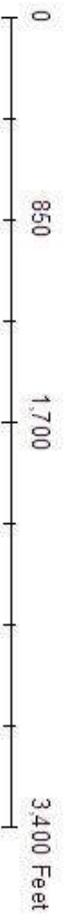
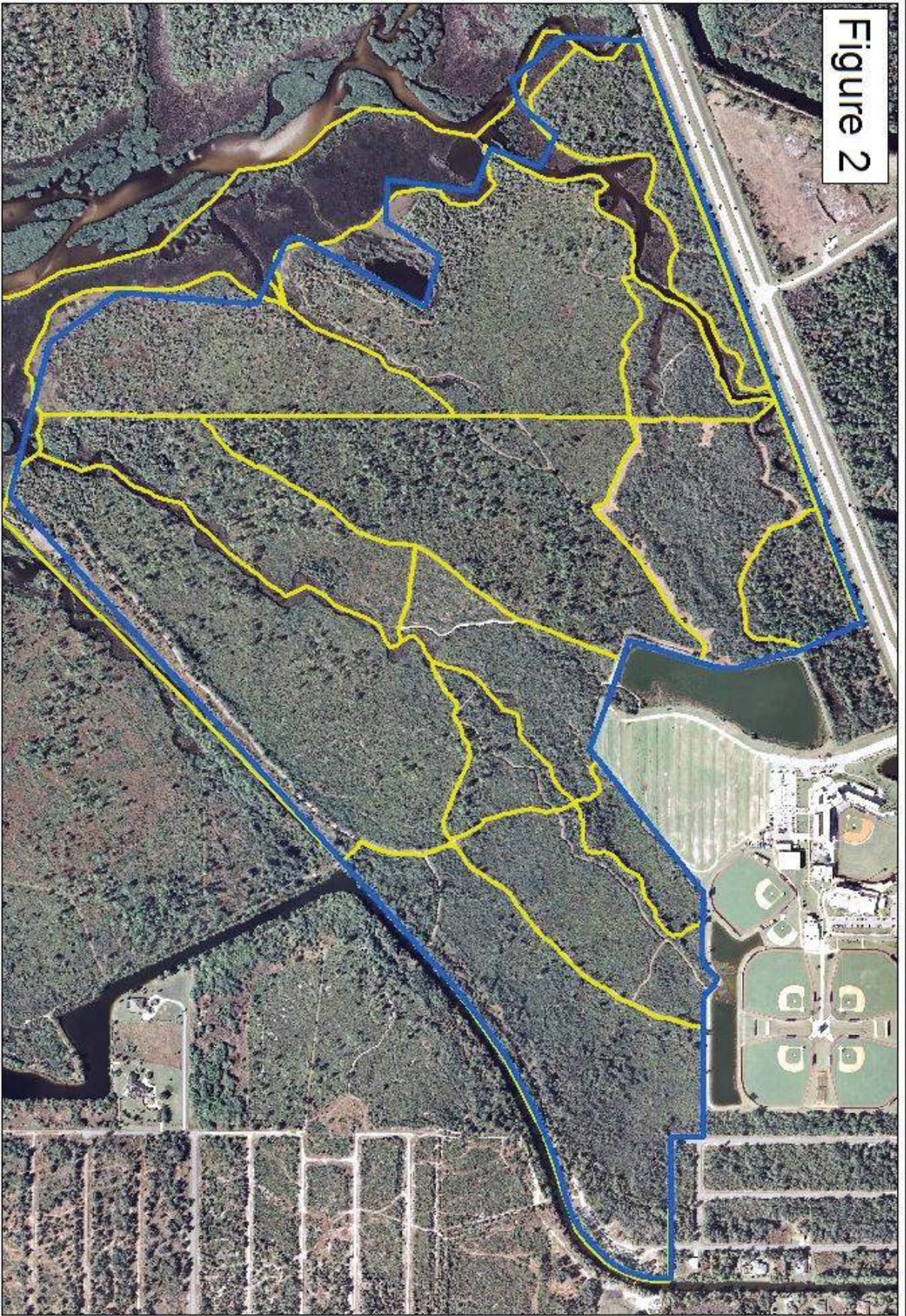


Figure 2



Tippecanoe Environmental Park: Management Units

Legend:
Park Boundary (blue line)
Management Units (yellow line)

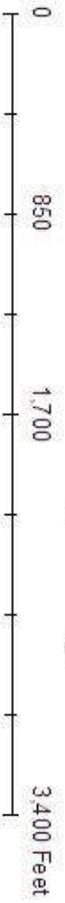


Figure 3

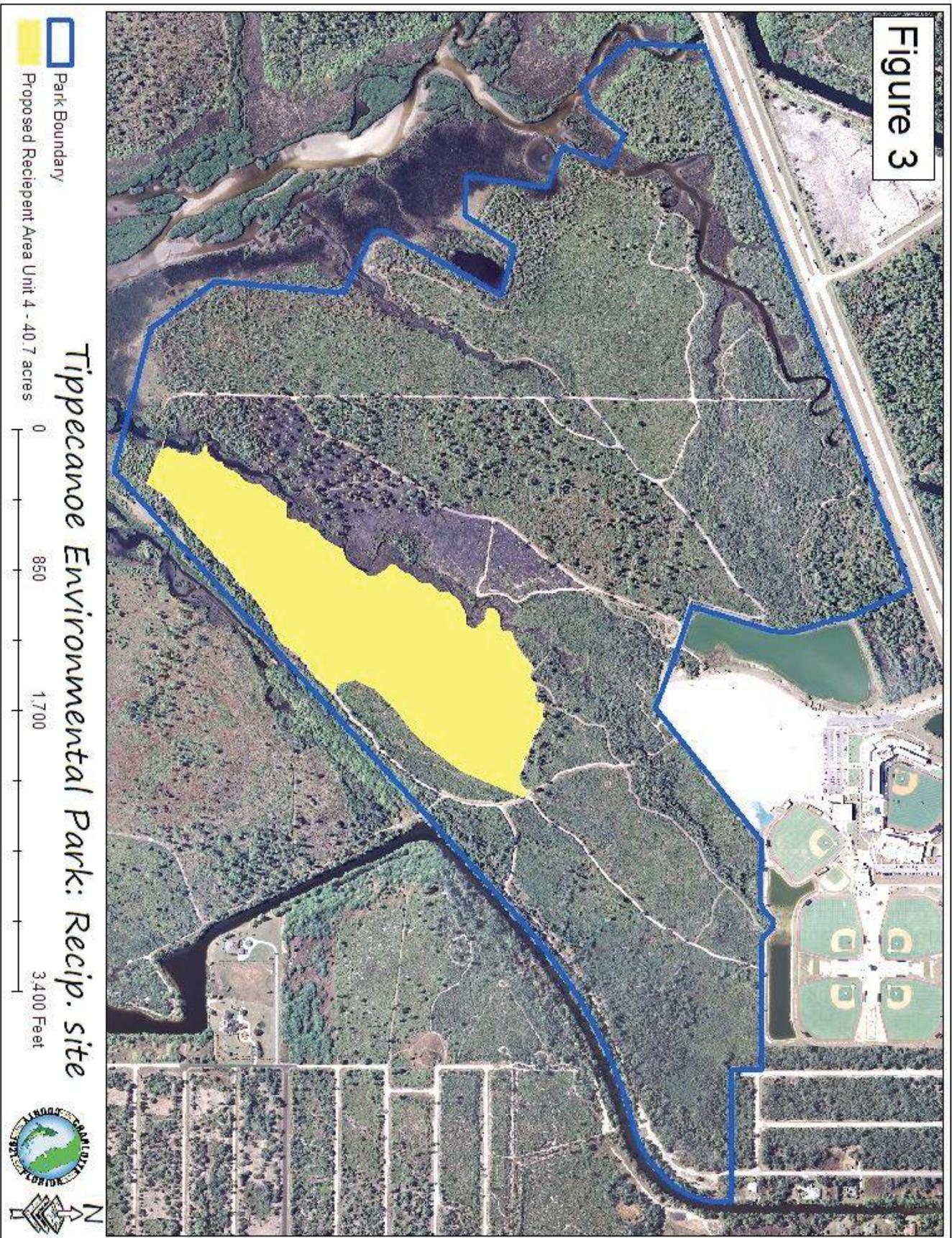


Figure 4

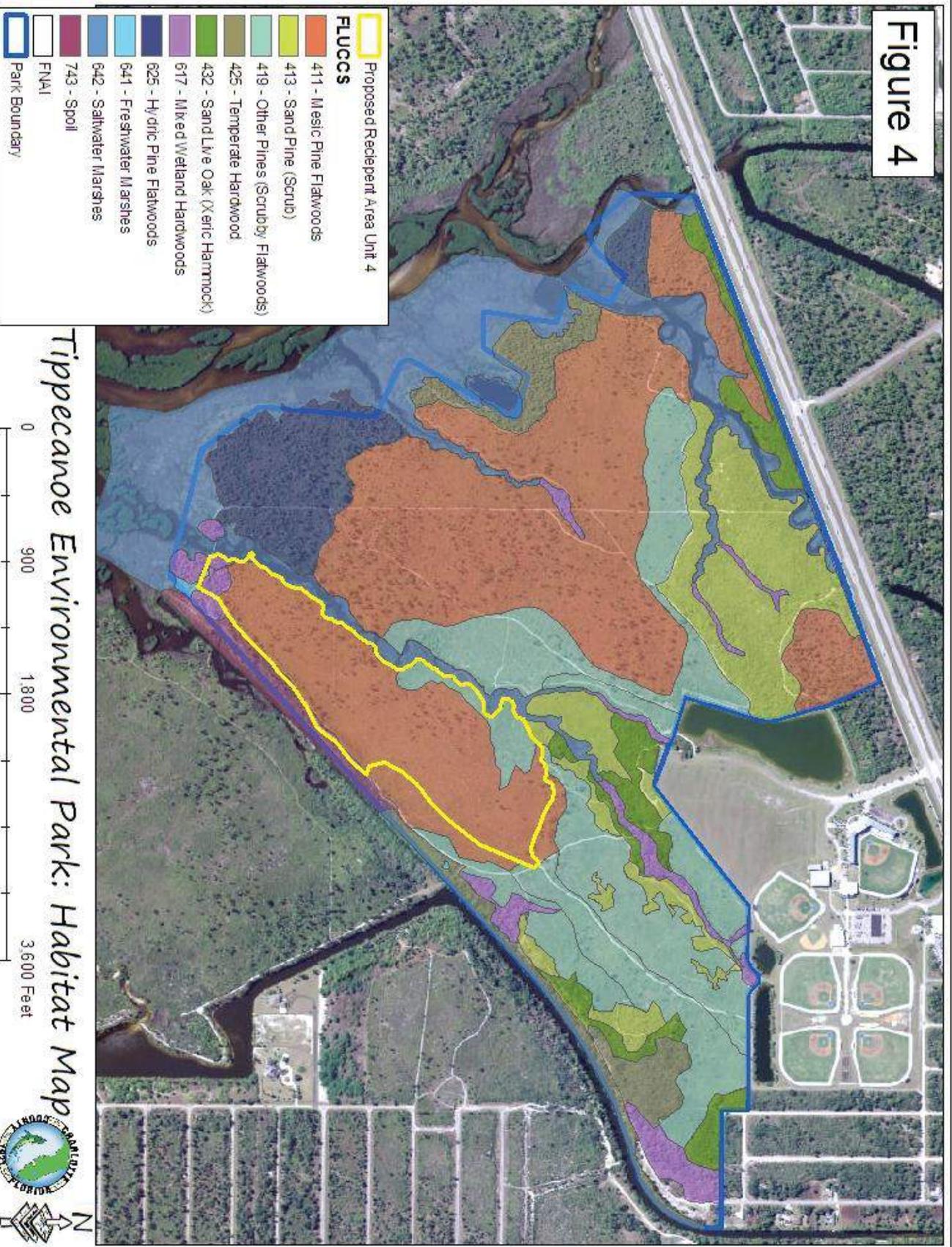


Figure 5

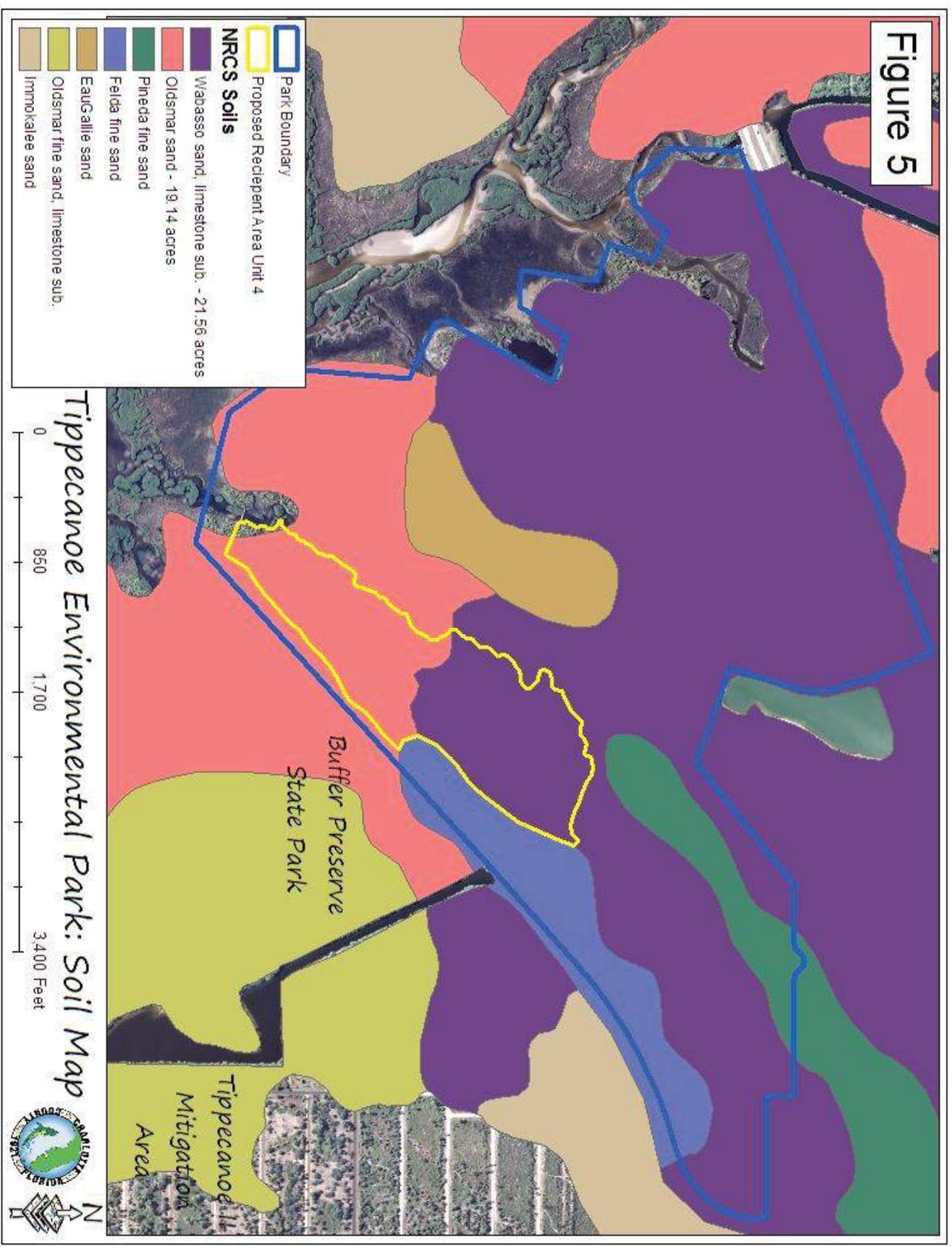
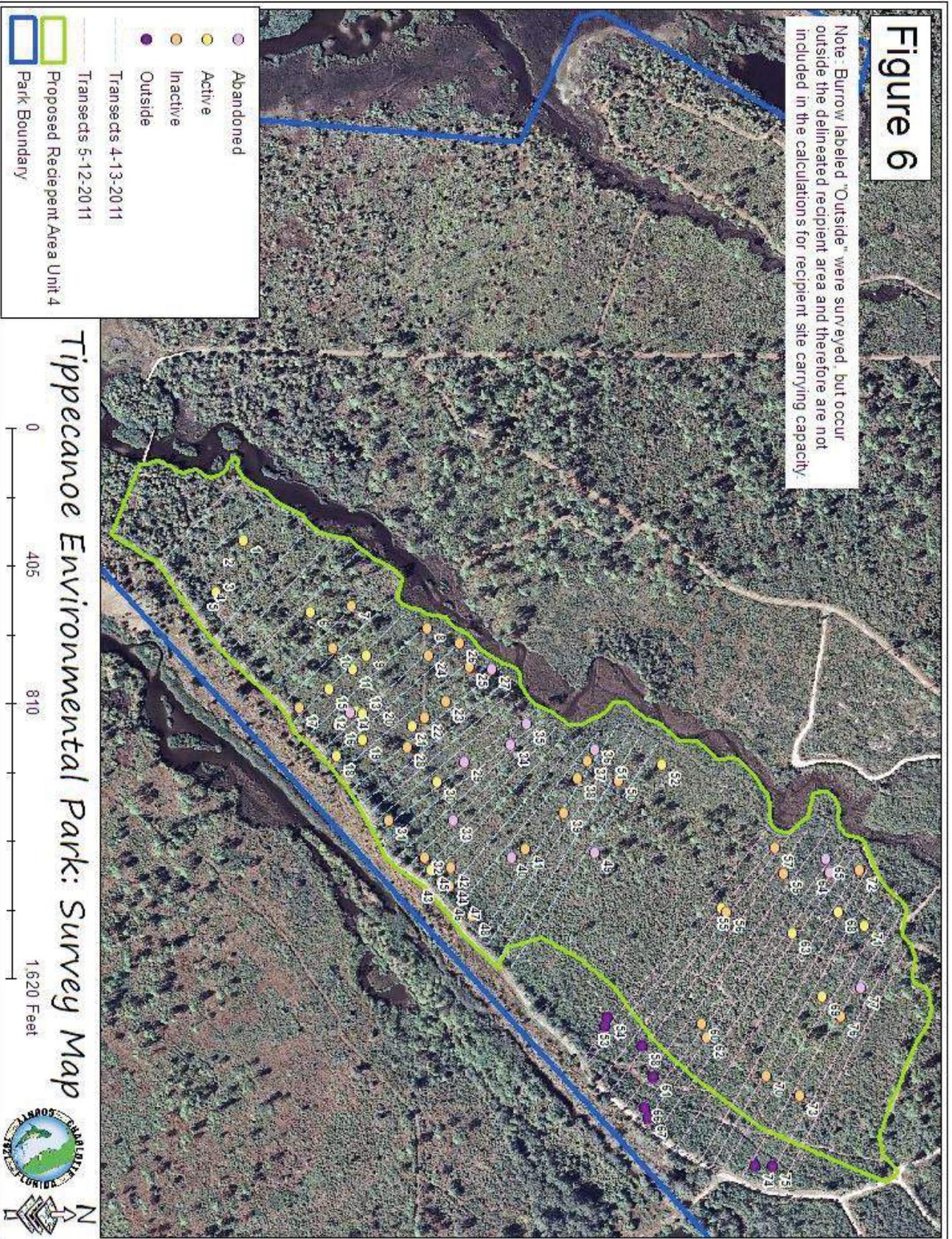


Figure 6

Note: Burrow labeled "Outside" were surveyed, but occur outside the delineated recipient area and therefore are not included in the calculations for recipient site carrying capacity.



This instrument prepared by:
Derek P. Rooney, Esq.
Assistant Charlotte County Attorney

After recording please return the document to Grantee:
Florida Fish and Wildlife Conservation Commission
ATTN: Rick McCann
620 South Meridian Street, Tallahassee
FL 32399-1600

CONSERVATION EASEMENT

THIS DEED OF CONSERVATION EASEMENT is given this ____ day of _____ 2011 by Charlotte County Board of County Commissioners, a political subdivision of the State of Florida whose mailing address is 18500 Murdock Circle; Port Charlotte, FL 33948, ("Grantor") to the Florida Fish and Wildlife Conservation Commission, an agency of the State of Florida, with its principal office at 620 South Meridian Street, Tallahassee, FL 32399-1600 ("Grantee").

The parties agree as follows:

WITNESSETH

WHEREAS, the Grantor is the owner of certain lands situated in Charlotte County, Florida, hereinafter referred to as the "Property", more specifically described in Exhibit A attached hereto and incorporated herein by this reference; and

WHEREAS, the property possesses natural, scenic, open space, wildlife preservation and conservation values (collectively, "conservation values") of great importance to Grantor, the people of Charlotte County, and the people of the State of Florida; and

WHEREAS, the specific conservation values of the Property are documented as part of the Habitat Management Plan pertaining to the Property, dated _____ ("Plan"). A copy of the Plan is attached hereto as Exhibit B, and incorporated herein by reference. The Plan contains baseline documentation that is an accurate representation of the Property at the time of this grant and is intended to serve as an objective information baseline for monitoring compliance with the terms of this grant; and

WHEREAS, Grantor intends that the conservation values of the Property be preserved and maintained by the continuation of land use patterns, including, without limitation, those relating to preservation and passive public existing at the time of this grant, that do not significantly impair or interfere with those values; and

WHEREAS, Grantor further intends, as owner of the Property, to convey to Grantee the right to preserve and protect the conservation values of the Property in perpetuity; and

WHEREAS, Grantee is a state public agency, part of whose mission is the conservation, preservation, protection or enhancement of lands such as the Property; and

WHEREAS, the Grantor, in consideration of the issuance by the Grantee of Permit No. _____ issued by the Grantee on _____ ("Permit") in favor of

the Grantor for the incidental take of listed wildlife species, is required to grant and secure the enforcement of a perpetual conservation easement pertaining to the Property.

WHEREAS, Grantor has acquired the property with partial funding from the Florida Communities Trust (FCT), and the Property is subject to certain limitations provided in the FCT Grant Award Agreement a/k/a the Declaration of Restrictive Covenants (as recorded in OR Book 1430, Page 908 in Charlotte County)(the "Agreement,") A copy of the Agreement is attached hereto as Exhibit C and

WHEREAS, as part and condition of the FCT funding, the County provided and FCT approved a Management Plan for the project site, and together with the Agreement, A copy of the Agreement is attached hereto as Exhibit D and

WHEREAS, Grantor intends that the conservation and recreation values of the Property be preserved and enhanced in accordance with the Management Plan, as it may be amended from time to time only after review and approval by FCT; and

WHEREAS, All activities by the Grantor and Grantee shall be consistent with the Agreement and Management Plan.

NOW THEREFORE, consistent with the issuance of the Permit, Grantor hereby grants, creates, and establishes a perpetual conservation easement upon the Property described in Exhibit A, which shall run with the land and be binding upon the Grantor, its heirs, successors and assigns, and remain in full force and effect forever. The recitals set forth above are true and correct and hereby incorporated into and made a part of this Conservation Easement

1. Purpose. The purpose of this Conservation Easement is to ensure that the Property or part thereof as described in this Conservation Easement shall be protected forever and used as conservation areas, consistent with the Habitat Management Plan ("Plan"). The parties intend that this Conservation Easement will confine the use of the Property to such uses as are consistent with the purpose of this Conservation Easement.

2. Rights of Grantee. To accomplish the purpose of this Conservation Easement the following rights are conveyed to Grantee:

- a. To preserve and protect the conservation values of the Property as defined in this Conservation Easement;
- b. To enter upon the Property at reasonable times and upon reasonable notice to the Grantor in order to engage in activities consistent with this Conservation Easement, to monitor Grantor's compliance with this Conservation Easement, and to otherwise enforce the terms of this Conservation Easement; provided that Grantee shall not unreasonably interfere with Grantor's use and quiet enjoyment of the Property; and
- c. To prevent any activity on or use of the Property that is inconsistent with the purpose of this Conservation Easement, and to require the restoration of such areas or features of the Property that may be damaged by any inconsistent activity or use.

3. Grantor's Reserved Rights. Grantor reserves to itself, its heirs, successors or assigns all rights as owner of the Property including the right to engage in all uses of the Property that are not expressly prohibited herein and are not inconsistent with the purpose of this Conservation Easement.

4. Prohibited Uses. Unless expressly authorized in accordance with the Plan (Exhibit B), the following are prohibited activities on the Property:

- a. Construction or placing of buildings, roads, signs, billboards or other advertising, utilities or other structures on or above the ground.
- b. Dumping or placing of soil or other substance or material as landfill or dumping

of trash, waste, or unsightly or offensive materials.

c. Removal or destruction of trees, shrubs, or other vegetation that is not part of restoration or land management activities.

d. Excavation, dredging, or removal of loam, peat, gravel, soil, rock or other material substance in such manner as to affect the surface.

e. Surface use except for purposes that permit the land or water areas to remain in their existing natural condition.

f. Activities detrimental to drainage, flood control, water conservation, erosion control, soil conservation, or fish and wildlife habitat preservation.

g. Act or uses detrimental to such retention of land or water areas in their existing natural condition.

h. Acts or uses detrimental to the preservation of the structural integrity or physical appearance of sites or properties of historical, architectural, archaeological, or culture significance.

i. Alteration of the Property except in compliance with the Plan.

5. No Public Access. No additional right of access by the general public to any portion of the Property is conveyed by this Conservation Easement. Existing access by the general public to Tippecanoe Environmental Park for the express purposes of passive recreational activities is not affected by this Conservation Easement.

6. Expenses; Taxes. Grantor retains all responsibilities and shall bear all costs and liabilities of any kind related to the ownership, operation, upkeep, and maintenance of the Property, including the maintenance of an adequate self-insurance fund or comprehensive general liability insurance coverage. Such responsibilities and costs shall include those associated with the management activities discussed in the Plan. Grantor shall keep the Property free of any liens arising out of any work performed for, materials furnished to, or obligations incurred by Grantor. Grantor shall pay before delinquency all taxes, assessments, fee, and charges of whatever description levied on or assessed against the Property by competent authority, and shall furnish Grantee with satisfactory evidence of payment upon request.

7. Costs of Enforcement. Any costs incurred by Grantee in enforcing the terms of this easement against Grantor, including, without limitation, costs of suit and attorney's fees, and any costs of restoration necessitated by Grantor's violation of the terms of this Easement, shall be borne by Grantor.

8. Liability. Both Charlotte County and the Florida Fish and Wildlife Conservation Commission, a subdivision of the state and a state agency respectively, agree to be fully responsible to the limits set forth in section 768.28 for their own negligent acts which result in claims or suits against each party and agree to be liable to the limits set forth in section 768.28, for any damages caused by said acts. Nothing herein shall be construed as a waiver of sovereign immunity by Charlotte County or the Florida Fish and Wildlife Conservation Commission.

9. Remedies. If Grantee determines that Grantor or successors are in violation of the terms of this Conservation Easement, it may take any of the following actions, after 30 day written notice to Grantor or successors to correct the violation: 1) Grantee may itself correct the violation, including but not limited to restoration of any portion of the Property affected to the condition that existed prior to the violation, and demand payment from Grantor for all costs associated with such action; 2) Grantee may bring an action at law or in equity in a court of competent jurisdiction to enforce the terms of this Conservation Easement, for specific performance, to temporarily or permanently enjoin the violation, recover damages for violation of

this Conservation Easement, including but not limited to the costs of restoration, and any other damages permitted by law. In any enforcement action Grantee shall not be required to prove either actual damages or the inadequacy of otherwise available remedies. Grantee's remedies shall be cumulative and shall be in addition to all remedies now or hereafter existing at law or in equity. As part of the consideration for this Conservation Easement, the parties hereby waive trial by jury in any action brought by either party pertaining to any matter whatsoever arising out of or in any way connected with this Conservation Easement.

10. Waiver. Grantor intends that enforcement of the terms and provisions of the Conservation Easement and the Plan shall be at the discretion of Grantee and that any forbearance on behalf of Grantee to exercise its rights hereunder in the event of any breach hereof by Grantor, its heirs, successors, personal representatives or assigns shall not be deemed or construed to be a waiver of Grantee's rights hereunder in the event of a subsequent breach. Grantor hereby waives any defense of laches, estoppel, or prescription.

11. Assignment. Grantee agrees that it will hold this Conservation Easement exclusively for conservation purposes and that it will not assign its rights and obligations under this Conservation Easement except to another organization qualified to hold such interests under the applicable state and federal laws and committed to holding this Conservation Easement exclusively for conservation purposes. Not later than thirty (30) days after recordation in the Public records of Charlotte County, Florida of an instrument transferring the title to the property, which is the subject of this easement, Grantor agrees to give written notice to Grantee of such transfer.

12. Severability. If any provision of this Conservation Easement or the application thereof to any person or circumstance is found to be invalid, the remainder of the provisions of this Conservation Easement, and the application of such provision to persons or circumstances other than those as to which it is found to be invalid, shall not be affected thereby.

13. Notices; References. All notices, consents approvals or other communications hereunder shall be in writing and shall be deemed properly given as of the second business day after mailing if sent by United State certified mail, return receipt requested, or by overnight mail service (e.g. FedEx, UPS), addressed to the appropriate party or successor-in-interest, at the address above set forth or such new addresses as either party may in writing deliver to the other. References in this Conservation Easement to the Grantor or Grantee include their successors-in-interest.

14. Venue; Waiver of Jury Trial. This Conservation Easement has been delivered in the State of Florida and shall be construed in accordance with the laws of Florida. As part of the consideration for this Conservation Easement, the parties hereby waive trial by jury in any action or proceeding brought by any party against any other party pertaining to any matter whatsoever arising out of or in any way connected with this Conservation Easement.

15. Amendment. This Conservation Easement may be amended, altered, released or revoked only by written agreement between the parties hereto, their successors or assigns.

16. Subordination of Liens. Grantor agrees that if the Property is subject to a mortgage lien or any other form of lien or security pertaining to the Property, Grantor shall provide recorded or recordable documentation to verify that such lien or security interest is subordinate to this Conservation Easement.

17. Recording. This Easement shall be recorded in the same manner as any other instrument asserting title to real property.

TO HAVE AND TO HOLD unto grantee, its respective successors and assigns forever. The covenants, terms, conditions, restrictions and purposes imposed with this easement shall not only be binding upon Grantor but also its agents, personal representatives, heirs, assigns and all other successors to it in interest and shall continue as a servitude running in perpetuity with the Property.

IN WITNESS WHEREOF Grantor has set its hand on the day and year first above written.

Reviewed and Approved by:

Ken Reecy, Community Program Manager
Florida Community Trust

Signed, sealed and delivered
In our presence as witnesses:

[Corporate name]

By: _____

Name: _____

Name: _____

Title: _____

Name: _____

STATE OF FLORIDA
COUNTY OF CHARLOTTE

The foregoing instrument was acknowledged before me this _____ day of _____, 2011 by _____, the _____ of, a Florida corporation, on behalf of the corporation. The above-named individual is personally known to me or produced _____ as identification.

Notary Public State of Florida

Commission No:
Commission expires:

GRANTEE'S ACCEPTANCE

The Florida Fish and Wildlife Conservation Commission hereby accepts the foregoing Conservation Easement.

FLORIDA FISH AND WILDLIFE
CONSERVATION COMMISSION

By: _____
Title: _____
Date: _____

Approved as to form and legal sufficiency:

FWC Attorney

Appendix E

COPY

**MONITORING AND RADIOCARBON DATING AT NO NAME CREEK MIDDEN
(8CH73A), TIPPECANOE ENVIRONMENTAL PARK,
CHARLOTTE COUNTY, FLORIDA**

George M. Luer, Ph.D., Archaeologist

Prepared for

Charlotte County Parks, Recreation, and Cultural Resources Department

December 2008

Charlotte County Historical Center
22959 Bayshore Road
Charlotte Harbor, FL 33980

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**MONITORING AND RADIOCARBON DATING AT NO NAME CREEK MIDDEN
(8CH73A), TIPPECANOE ENVIRONMENTAL PARK,
CHARLOTTE COUNTY, FLORIDA**

George M. Luer, Ph.D., Archaeologist

Executive Summary: As part of building bridge ramps at Tippecanoe Environmental Park, archaeological work was conducted at No Name Creek Midden. Five radiocarbon dates show that two portions of the midden date to approximately 2,500 to 3,000 years ago, with a sixth date suggesting an age of as much as 4,000 years. This means that Indians lived at the No Name Creek Midden during the Terminal Archaic Period (ca. 500-1000 B.C.) and possibly in the Late Archaic Period (ca. 1000-2000 B.C.). There also are suggestions, based on cultural remains, that the midden perhaps was visited by more recent Indians (since ca. A.D. 500). These and other findings are further confirmation that the No Name Creek Midden merits protection. The site contains significant information about our region's past, including human adaptation to the Charlotte Harbor estuarine system, of which Tippecanoe Bay is an important part.

Introduction

In June 2008, Charlotte County government asked me to conduct archaeological monitoring of postholes to be dug in a Native American shell midden on Charlotte County property in Tippecanoe Environmental Park. The monitoring was designed to avoid impacts to potential sensitive features (e.g., possible human burials) and to recover information about the age and cultural affiliation of the No Name Creek Midden (which is recorded in the Florida Department of State's Florida Master Site File as 8CH73A).

Earlier, in 2006, I was contacted about construction plans at the No Name Creek Midden by Linda Coleman and David Milligan of the Charlotte County Parks, Recreation, and Cultural Resources Department. In May 2006, we visited the site and discussed possible impacts to the Indian midden. Planning by Charlotte County continued in 2007, with final approval by the State of Florida in May 2008 that included monitoring for impacts to the archaeological site (Gaske 2008).

Prior to this present project, the age of the No Name Creek Midden was unknown. It was important to investigate its age and cultural affiliation for two main reasons. First, the midden was purchased for preservation in 1995 through Charlotte County and the State of Florida's Preservation 2000 Trust Fund, with avoidance of impacts required by the Florida Communities Trust. Second, gaining basic knowledge about the midden is necessary for public education at Tippecanoe Environmental Park. Thus, to offset impacts and to gain needed knowledge, the County included the recovery and dating of radiocarbon samples as part of the present monitoring work.

Archaeological Background

The No Name Creek Midden is located in the upper reaches of the Charlotte Harbor estuarine system in north-central Charlotte County. The midden is on the western side of an unnamed tidal creek that enters Tippecanoe Bay, near the mouth of the Myakka River. The site is in the salt marsh/mangrove ecotone. This is an environmentally stressed area maintained by winter frosts and freezes, spring droughts, and sporadic fires. Another stress is the area's seasonally fluctuating salinity (low in the rainy season, high in the dry season).

The No Name Creek Midden was first recorded in the Florida Master Site File in 1981. At that time, two much smaller middens (8CH73B and C) also were noted on the opposite, eastern side of the creek. In 1995, I was hired by the land manager to make a limited assessment of the site and to update the Florida Master Site File. I wrote a report that included a contour sketch map of the No Name Creek Midden, which measured approximately 55 m (180 ft) north-south, 34 m (110 ft) east-west, and 0.6 m (2 ft) above high tide level. I described the midden's drought and fire resistant vegetation, and I analyzed a limited surface collection (Luer 1997).

In 2002, I included information about the No Name Creek Midden in a historical and zooarchaeological study of the Tippecanoe Bay area (Luer 2002). My data from the No Name Creek Midden was very limited, with most of my information coming from a smaller, more southern state-owned midden (outside County property) that I radiocarbon dated to the Late Weeden Island Period (ca. A.D. 700-1000) and precontact Safety Harbor Period (ca. A.D. 1200 to 1500). In my 2002 study, I emphasize that shell middens in this ecological zone are important repositories of cultural and paleoenvironmental data about human use of, and adaptation to, the upper estuary. This zone contains a variety of freshwater and saltwater fish, and it is a nursery area for juvenile saltwater fish.

Upper Charlotte Harbor was strategically located between inland and more seaward areas, each with a different array of resources. We need to study Indian middens in this area so that we can learn when people began to use the upper estuary (hundreds or thousands of years ago?). We also need to learn if people used the area seasonally or year-round. The eventual recovery of data bearing on these questions will help us to study human adaptation to upper Charlotte Harbor and Tippecanoe Bay, which are important parts of one of the largest estuarine systems in Florida.

Background of Construction

The Charlotte County Parks, Recreation, and Cultural Resources Department assumed management of Tippecanoe Environmental Park on October 1, 2001. Formerly, since 1995, the property had been named Tippecanoe Scrub Preservation Area and managed by the Charlotte Harbor Environmental Center. In its effort to develop the site for public access and to improve land management (e.g., accessibility for fire control), the County began to build paths and bridges on the property.

In 2002, Charlotte County built a wooden bridge (Bridge B) across No Name Creek. The western end of Bridge B met the northeastern edge of No Name Creek Midden, where several wooden pilings were inserted. Further work at the site was halted in 2002 due to the passage of Hurricane Charly and its impact on Charlotte County.

In the spring of 2006, construction resumed when the County built another wooden bridge (Bridge A) across the salt marsh to the west of the site. Bridge A met the western edge of No Name Creek Midden, where several more wooden pilings were inserted. At that time, plans called for construction of heavy wooden ramps that would descend to the midden at each bridge end. Discussions indicated that these ramps, as then designed, would impact the midden considerably because they would entail digging for pilings and cross-pieces.

In order to minimize such impacts, the County redesigned the ramps in 2007. The new design would limit impacts to 24 postholes, each 5- to 6-inches in diameter and 24-inches deep. Nine postholes would be dug at the midden's western edge (Bridge A, South Ramp), and 15 postholes would be dug at the midden's northeastern edge (Bridge B, West Ramp). These designs were approved by the State of Florida, and construction resumed in June 2008.

Field Observations

Methods

Early on June 23, 2008, I and a field assistant, Bill Godek, met the construction crew, who used a standard posthole digger to dig a series of postholes at the western edge of the site. I numbered the postholes as Hole #1 through Hole #9 in the sequence in which they were dug (Figure 1). I did the same at the northeastern edge of the site, where I numbered postholes in sequence as Hole #10 through Hole #24 (Figure 2).

As the holes were dug, the crew dumped extracted material on plastic sheeting. Black or dark grey muddy dirt was abundant in every hole. The dirt included sand in the midden's western portion. It contained even more sand in the midden's northeastern portion, where it also had a more muddy consistency.

Midden mollusc shells also were abundant, especially fragments of the eastern oyster (*Crassostrea virginica*) and valves of the Carolina marsh clam (*Polymesoda caroliniana*). Also present were valve fragments of the ribbed mussel (*Geukensia demissa granosissima*) and a few king's crown (*Melongena corona*) and moon snail (*Polinices duplicatus*) shells. For each posthole, I noted major changes in extracted materials in order to record a general indication of stratification (Appendices 1 and 2).

We troweled through the extracted midden material, collecting items by numbered hole and by general stratigraphic association. We did not employ a screen so that we did not slow the construction crew. A screen was not essential for our goals of monitoring for possible features (e.g., human burials) and recovering radiocarbon samples.

All collected materials were placed in labeled plastic bags. We collected fragments of pottery, conspicuous vertebrate faunal remains, and unusual mollusc shells (e.g., fragments of high-salinity shells). At a number of holes on each side of the midden, we also collected Carolina marsh clam valves to use for radiocarbon dating. By the end of the afternoon of June 23, 2008, we completed our work at the 24 postholes.

Stratification

Material removed from postholes does not yield a precise record of stratification. In this case, however, it provided some information about the layering and composition of the midden. In both areas tested, the midden's upper 6 inches consisted of black dirt (sand and organic material) mixed with shells, often fragmentary, such as bits of oyster shell. This uppermost stratum may be more recent than underlying, denser shell deposits.

Below 6 or 8 inches, denser midden deposits were encountered. They contained dark grey sandy soil and fairly intact food shells, predominantly eastern oyster and Carolina marsh clam valves. Some vertebrate food remains also were present.

At the midden's western edge (Holes #1 through #9), the bottom of the midden was not reached (it continued below 24 inches from the surface). At the midden's northeastern edge, many postholes reached sand that may represent the bottom of the midden. However, it is possible that cultural material may occur deeper in some of these postholes. Deeper testing will be needed to investigate this.

Shell was greater in quantity (denser) in the midden's western portion than in its northeastern portion. The black organic soil was not as sandy in the midden's western portion as it was in its northeastern portion. Indeed, dense sand appeared in the bottoms of some postholes there (Holes #14, #22), and it rose upward (Holes #19, #21) to comprise almost the lower halves of the farthest north postholes (Holes #15, #16, #17, #18). This sandy deposit may be a buried levee alongside the creek. Sand in this northeastern portion of the midden may reflect repeated flooding of the adjacent tidal creek and the gradual deposition of sand on and into the midden.

In general, shell middens tend to accumulate upward and outward. Along a shore, they tend to grow upward and backward (away from the shorefront). Applying this model to the No Name Creek Midden, one could hypothesize that the deepest midden deposits near the creek may be the oldest, if habitation began by the open water of the creek. In such a scenario, the midden could have accumulated upward and westward (back from the creek) over time.

At present, data are insufficient to test this model. Some support may come from the oldest radiocarbon date, from Hole #20, which is the deepest sample from the midden's northeastern portion (see below). However, the rest of the radiocarbon dates, from both areas of the midden, are younger and in the same age range. No radiocarbon dates were obtained from the midden's upper stratum in either area (above 6 to 8 inches below the surface).

Cultural Materials Recovered

Laboratory Work

In the days immediately after field work, I used freshwater to wash some of the materials we collected, especially the shells we collected for radiocarbon dating. This was labor-intensive because much dirt adhered to the shells. It was a sticky fine mud on shells from the western portion of the midden. The mud was less sticky on shells from the midden's northeastern portion, but some concreted sand was cemented to shells from that area. After drying, I replaced the materials in bags for storage.

Next, I inspected all our collections and listed them by provenience (Appendices 3 and 4). Then, I described and analyzed them (see below). I also removed mollusc shells from six of our collections, and these I used for radiocarbon samples. I carefully weighed and filled out forms describing these shells. These shell samples were then shipped to a radiocarbon dating laboratory for analysis (see below).

Artifacts and Other Cultural Items

Pottery sherds were not common. They consist of sand-tempered plain rim and body sherds. An outcurving sand-tempered plain rim sherd with a flat lip came from the shallow, upper layer (0 to 6 inches below surface) in the western portion of the midden (Hole #7). This rim sherd is suggestive of a relatively recent occupation, since ca. A.D. 500.

In contrast, two incurving sand-tempered plain rim sherds came from the lower shell deposit in Holes #18 and #23. The two sherds crossmend, even though they came from approximately 14 feet apart. These rim sherds have a very slightly chamfered lip and four incised lines on their interior surface (two running parallel to the lip, two running diagonally). Such pottery can date to ca. 1000 B.C. to ca. A.D. 500 in the Charlotte County area.

Fragments of possible shell tools include pieces of marine shells apparently imported by the Indians from high-salinity areas. These include pieces of robust left-handed whelk (*Busycon sinistrum*) shells from Holes #3, #10, #17, and a piece of a large, heavy quahog (*Mercenaria campechiensis*) left valve in Hole #8. Such quahog valves often were used as anvils or chopper tools, while robust whelk shells were used as cutting-edged tools or hammers. The piece of robust whelk shell from Hole #10 has a portion of its outer lip intentionally ground smooth, suggesting that it is a fragment of a broken tool (probably a cutting-edged tool).

One shell from Hole #8 may represent an item from a high-salinity estuary or barrier beach to the west. It is a relatively small, shallow valve of a scallop (cf. *Argopecten* sp.) with fine ribs and traces of reddish coloration. Such shells can be colorful, and the Indians might have brought it to the site as a curiosity or ornament.

An apparent curiosity is a mineralized fossil horse tooth from Hole #10. Such fossils erode from downcut streams in the surrounding area, and they also wash up on beaches in the region. The Indians apparently found this fossil horse tooth and brought it to the midden, where it was uncovered in Hole #10.

Faunal Remains

Shells from surrounding creek and marsh habitats were abundant, especially fragments of the eastern oyster and valves of the Carolina marsh clam. These represent food shellfish harvested by the Indians, who discarded their shells on the midden. These and several other common shellfish taxa are identified above (see "Field Observations"). In addition, we found scarce remains of high-salinity shellfish, namely a single surf clam (*Spisula solidissima similis*) valve (Hole #4) and a claw fragment of a stone crab (*Menippe mercenaria*) (Hole #19).

We also recovered a number of vertebrate remains (Appendices 3 and 4). They are biased in favor of fragments of dense bone due to effects of preservation and recovery methods (we did not use a screen in the field, and we did not collect column samples for analysis). Nonetheless, identified vertebrate taxa include saltwater catfish, black drum, jack, mullet, turtle, snake, alligator, and deer. All were represented by bone fragments, with catfish also represented by otoliths ("ear stones").

In addition to two hardhead catfish (*Arius felis*) otoliths of typical size (Hole #1), I was surprised to discover eight tiny otoliths of saltwater catfish (*Ariidea*). I found them in the dark sand that I washed off the Carolina marsh clam valves that we collected as radiocarbon samples from Holes #10 and #12. The tiny size of these otoliths (less than 5 mm across, and most of them approximately 3 mm across) indicates that they came from very small, juvenile catfish of less than 10 cm standard length. The Indians could have caught such small catfish in fine-mesh nets or traps of some kind.

We recovered a large atlas vertebra of a black drum (*Pogonias cromis*) in Hole #23. Hole #6 produced a bone fragment from a jack (*Caranx cf. hippos*), and Hole #4 yielded a bone fragment perhaps of a sheepshead (*Archosargus probatocephalus*). Black drum, crevalle jack, and sheepshead occur in surrounding creeks and Tippecanoe Bay. The Indians could have caught them using nets or hooks and lines. In Hole #1, I found a vertebra of a mullet, probably a striped mullet (*Mugil cf. cephalus*), which are common in local creeks and Tippecanoe Bay. The Indians could have caught mullet using nets and spears. Two opercula from two kinds of very small unidentified bony fish also came from Hole #20. The Indians could have caught such small fish in fine-mesh nets.

Remains of turtles (Testudines) came from a number of postholes (Holes #1, #4, #7, #8, #12, #18) and represent several individuals, possibly including a terrapin and a pond turtle. A single small snake (Serpentes) vertebra came from Hole #12. We recovered a single scute fragment of alligator (*Alligator mississippiensis*) in each tested portion of the midden (Holes #7, #11), which may suggest that the Indians hunted alligator during the Terminal Archaic Period.

Alligator remains are scarce or lacking at some later midden deposits in Charlotte County. Remains of white-tailed deer (*Odocoileus virginianus*) include fragments of a phalange (Hole #4) and distal fragments of a longbone (Hole #19). The Indians hunted deer in the area surrounding Tippecanoe Bay.

Future recovery and research of faunal remains may help us understand what times of the year the Indians visited or lived at the No Name Creek Midden. For example, tiny catfish otoliths may reflect a certain season in the growth of these fish, and thus they may suggest a particular season when the Indians caught them. In addition, growth increments in Carolina marsh clam valves may support certain seasons of exploitation, or year-round harvesting.

Rocks

Several limestone rocks were collected from the postholes dug in the midden. All appear to be of local origin, probably exposed naturally by erosional down-cutting in nearby tidal creeks. Most, if not all, might have had oysters attached to them when they were collected and brought by the Indians to the midden, where they were discarded. No fire-cracked rock was observed.

Radiocarbon Dating

Prior to this present project, the age of the No Name Creek Midden was unknown. Based on my 1996 surface collection of pottery sherds, I wrote that "the sample is too small to determine a definite age range for the midden," although I speculated that it "might have been used sometime during the Late Weeden Island through precontact Safety Harbor periods (ca. A.D. 700-1500)" (Luer 2002:53). It was because of this uncertainty that I urged Charlotte County to make radiocarbon dating part of this present project.

I submitted six samples of mollusc shells to Beta Analytic, Inc., an experienced professional radiocarbon laboratory in Miami, Florida. Three of the samples came from the midden's western side (Bridge A, South Ramp), and three came from the midden's northeastern side (Bridge B, West Ramp). I described these samples and their proveniences in detail in radiocarbon sample submittal sheets that I sent to the laboratory with the samples.

The reader is cautioned that sets of radiocarbon dates are needed to interpret the age of stratified deposits, such as a shell midden. A single radiocarbon date is a piece of data only, which needs the further corroboration and refinement of additional dates. Moreover, every radiocarbon date is really a probability age range, with no fixed definite "date." Because of this, I obtained three radiocarbon dates from each portion of the midden that was dated. In this case, three dates are a minimum for beginning to interpret an accurate estimate of age for each portion of the site.

At the No Name Creek Midden, I used Carolina marsh clam shells as radiocarbon samples. Today, Carolina marsh clams live in low-salinity estuarine habitats that can fluctuate greatly in salinity. It is a safe assumption that this was the case in previous centuries as well.

The isotopic carbon ratios (the "carbon 13-carbon 12 ratios") that were obtained for the six shell samples are strongly negative (Table 1). These ratios appear to reflect a significant influence of freshwater, meaning that the shells grew in a freshwater or low-salinity setting (Darden Hood, Co-Director of Beta Analytic, Inc., personal communication 2008). For that reason, I do not apply marine corrections in Table 1 (marine corrections would make the calibrated age ranges approximately 400 years younger).

The radiocarbon dates from the No Name Creek Midden support an age range of ca. 2500 to 3000 years ago. In west-central Florida, this age range equates to the Florida Transitional Period (a.k.a., the Terminal Archaic Period in southern Florida). The two oldest dates from the midden also suggest earlier use (one date from Hole #20 suggesting perhaps as much as ca. 3800 to 4000 years ago), which may place some occupation at the midden during the Late Archaic Period (which ranges from 5000 to 3000 years ago).

These dates support the interpretation that portions of the No Name Creek Midden date primarily to the Terminal Archaic Period (ca. 500 to 1000 B.C.). This is an older age for the midden than previously suspected. However, it is not inconsistent with material remains recovered during this project.

In the Charlotte Harbor area, some other sites were used during the Terminal Archaic Period, although they are uncommon. In Charlotte County, they include the Turtle Bay 2 Site (8CH37) (Newman and Swann 2008) and apparently portions of the Cedar Point Shell Heap (8CH8, now mostly destroyed) and Cedar Point Ridge (8CH62/64) (Luer 1999). In Lee County, they include Calusa Island (8LL45) (Luer 1989) and two areas on Useppa Island (8LL51) (Marquardt 1999:81-84). In Sarasota County, evidence of possible Terminal Archaic occupation has been found at the Myakkahatchee Site (8SO397) in North Port (Luer et al. 1987). At all these sites, the Terminal Archaic Period is not well-known and is in need of study.

Comments on Mobility and Stratification

The No Name Creek Midden yielded some shells that originated in high-salinity areas (areas that are typically higher in salinity than Tippecanoe Bay and upper Charlotte Harbor, including the mouths of the Myakka and Peace rivers). Midden remains that originated in high-salinity areas support the interpretation that some Indians who camped at the No Name Creek Midden had contact with the higher-salinity Gulf coast or outer estuary. This suggests that some Indians either moved back and forth between the upper estuary and the higher-salinity coast, and/or that they traded with other Indians who lived in higher-salinity areas.

If some Indians came directly to the No Name Creek Midden from the outer coast, they might have brought tools and food grubsteaks (including living edible shellfish) with them. Two high-salinity shells (a surf clam valve in Hole #4 and a small left-handed whelk shell in Hole #7) are suggestive of such food grubsteaks. Likewise, a quahog valve fragment in Hole #8 might have been part of a food grubsteak or a tool shell. These three high-salinity shells are all from 0-

6 inches below surface in the uppermost black dirt layer on the western side of the site (Bridge A, South Ramp). This shallow layer did not yield enough shell to be dated during this project. The uppermost black dirt layer may be younger than the underlying deposits of oyster and Carolina marsh clam shell, where all of this project's radiocarbon samples were obtained.

Two high-salinity shells also came from the uppermost black dirt layer in the northeastern area of the site (Bridge B, West Ramp). There, in the top of Holes #14 and #15, we found a valve and a valve fragment of the ponderous ark (*Noetia ponderosa*). These shells also may be from the outer estuary and may suggest food grubsteaks or shells brought for use as tools. In post-Archaic times, the Indians made perforations in ponderous ark valves and used them as fishnet sinkers (but the Indians apparently did not perforate and use them as sinkers during the Archaic Period).¹ If related to post-Archaic fishing activity, perhaps the two ark valves from Holes #14 and #15 may represent late additions to the top of the midden.

In 1996, I did find a perforated ponderous ark valve on the surface of the No Name Creek Midden. This artifact, plus a Belle Glade Plain sherd that I found on the midden's surface in 1996 (Luer 2002:53), suggest that the midden was visited by post-Archaic Indians while fishing in the immediate area. We know from other nearby middens, such as state-owned Tippecanoe Bay Midden (8CH87) and Muddy Cove 2 (8CH72), that Indians used the area in post-Archaic times (Luer 2002; Luer and Almy 1980:219; Patton 2000:38-40). Visitation by such later Indians may account for high-salinity shells in the uppermost black dirt layer of the No Name Creek Midden. Further research could determine if Indians used the midden after the Terminal Archaic.

Some contact with the outer estuary also is suggested by high-salinity remains from deeper in the No Name Creek Midden. These remains consist of a fragment of a robust whelk shell from Hole #3 (15-28 inches b.s.) and a piece of a stone crab claw from Hole #19 (8-18 inches b.s.). The apparent origin of these remains in the midden's deeper, dense shell deposit (that was radiocarbon dated by this project) suggest that they date to the Terminal Archaic Period. They hint that contacts between the Indians of the outer estuary and those Indians who used the No Name Creek Midden were already established during the Archaic Period.

More research is needed to determine the nature and extent of such possible contact. Nonetheless, a major focus for Indians at the No Name Creek Midden during the Terminal Archaic Period was the exploitation of its surrounding, local food resources. The midden's dense shell deposit (generally below 6 to 8 inches from the surface) shows that obtaining fish, oysters, Carolina marsh clam valves, turtles, and deer were important activities of the Indians. The mollusc shells comprising the midden also show that salt marsh and tidal creek habitats were in existence 2500 to 3000 years ago.

Conclusion

This was a worthwhile project. It led to the discovery that the No Name Creek Midden contains deposits that are older than previously suspected. Indeed, portions of the midden date to approximately 2500 to 3000 years ago. This discovery re-enforces earlier assessments that the

midden is a significant site worthy of preservation and research. The site contains information that can improve our understanding of Charlotte County's human history and natural environment. It can help us understand how people used and adapted to the greater Charlotte Harbor estuary, in particular its upper reaches, where rivers and creeks mix with the sea.

Acknowledgments

I want to thank Linda Coleman and David Milligan of the Charlotte County Parks, Recreation, and Cultural Resources Department. Without their interest, this project would not have happened. I also want to thank Tom Henry, Special Projects Foreman, for his interest and for providing field equipment and construction diagrams. In the field, Ron Marco and his crew worked carefully to provide material from postholes. Their help was important to the success of the field work. Also important was the field assistance of Bill Godek. A visit from Tina Powell, Environmental Specialist with Charlotte County, was appreciated.

Note

¹ In 1982, I did not find perforated ponderous ark valves while working in the Hill Cottage Midden at the Palmer Site in Osprey, Sarasota County, which dates to the Archaic Period. Such valves are common in the neighboring Shell Ridge Midden, which is post-Archaic in age.

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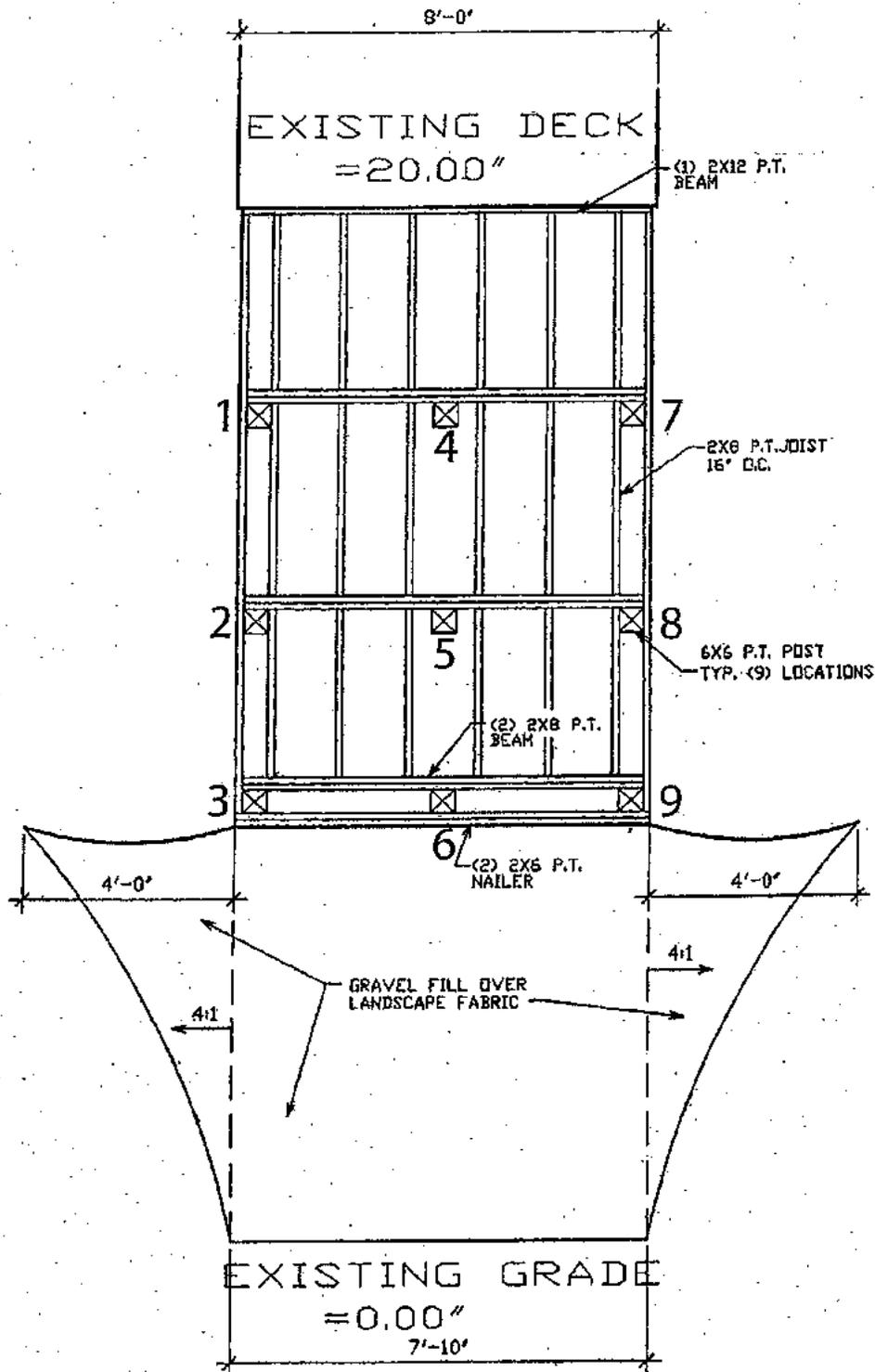


Figure 1. Plan of numbered postholes 1 through 9, Bridge A, South Ramp. These are the locations of Holes #1 through #9 in the western side of the No Name Creek Midden (deck = bridge).

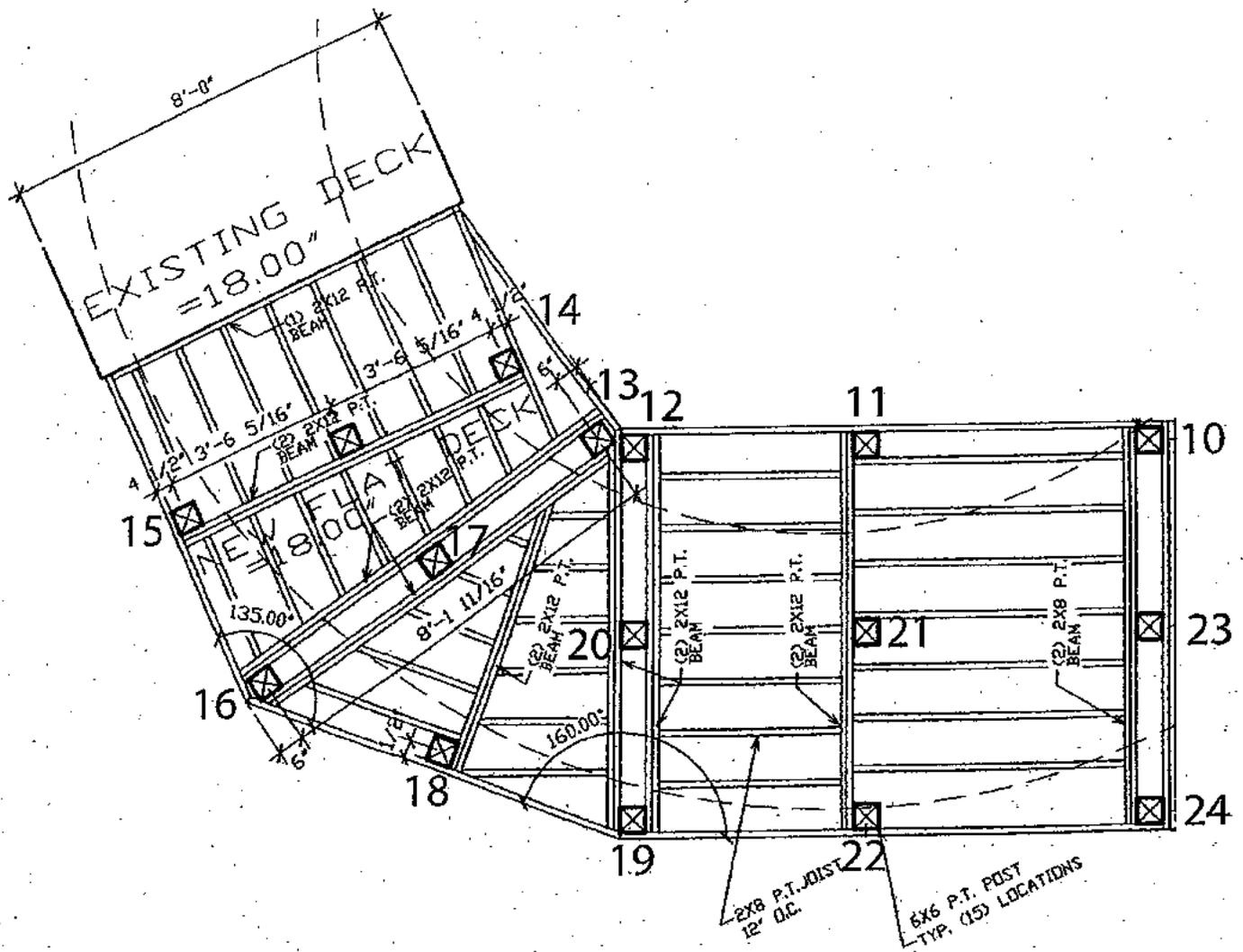


Figure 2. Plan of numbered postholes 10 through 24, Bridge B, West Ramp. These are the locations of Holes #10 through #24 in the northeastern side of the No Name Creek Midden (deck = bridge).

Table 1. Radiocarbon dates, with freshwater calibration (reservoir effect not applied). These dates are for Carolina marsh clam valves from the No Name Creek Midden (8CH73A). The measured and conventional ages are in radiocarbon years before present (B.P.; present = A.D. 1950) and are rounded to the nearest ten. The values for stable isotopes (the $^{13}\text{C}/^{12}\text{C}$ ratios) are strongly negative, suggesting an input from freshwater (typical marine shell = 0 ‰). The conventional ages reflect the addition of 410 years for typical marine shell, from which years are subtracted for negative $^{13}\text{C}/^{12}\text{C}$ values (at 1 ‰ = 16 years) (e.g., -2.5 = -40 years). All the conventional and calibrated dates in this table were derived by Beta Analytic, Inc., using the Intcal98 Radiocarbon Age Calibration. One sigma age ranges have 68% probability, and two sigma age ranges have 95% probability.

Location on Midden, Hole #, Depth Below Surface, Lab ID#	Measured, Uncorrected Age B.P., 1 Sigma	$^{13}\text{C}/^{12}\text{C}$ Ratio (‰)	Conventional, Corrected Age B.P., 1 Sigma	Calibrated, Calendrical Range, 2 Sigma
Western Side				
1. Hole #1, 9-24 inches, Beta-249020	2350 +/- 50	-6.6	2650 +/- 50	cal B.C. 900-780
2. Hole #6, 8-24 inches, Beta-249021	2340 +/- 50	-9.4	2590 +/- 50	cal B.C. 800-590
3. Hole #9, 6-24 inches, Beta-249022	2710 +/- 50	-8.5	2980 +/- 50	cal B.C. 1380-1040
Northeastern Side				
4. Hole #10, 6-24 inches, Beta-249023	2320 +/- 50	-5.5	2640 +/- 50	cal B.C. 900-770
5. Hole #12, 12-23 inches, Beta-249024	2550 +/- 40	-11.0	2780 +/- 40	cal B.C. 1010-830
6. Hole #20, 16-24 inches, Beta-249025	3300 +/- 40	-9.0	3570 +/- 40	cal B.C. 2020-1780

Appendix 1. Stratigraphic descriptions, western edge of midden, Bridge A, South Ramp. Strata are based on material removed from postholes. CMC = Carolina marsh clam.

Hole #1

0-9 in b.s.: black dirt, diffuse degraded oyster and CMC valves.

9-24 in b.s.: black/grey dirt, oyster shell, CMC valves.

Hole #2

0-5 in b.s.: black dirt, diffuse degraded oyster and CMC valves.

5-15 in b.s.: black/grey dirt, oyster shell, CMC valves.

15-24 in b.s.: grey/black dirt, oyster shell, CMC valves more dense.

Hole #3

0-8 in b.s.: black dirt, diffuse oyster shell and CMC valves.

8-15 in b.s.: black/grey dirt, oyster shell and CMC valves (not very dense).

15-28 in b.s.: grey/black dirt, oyster shell and CMC valves (not very dense).

Hole #4

0-6 in b.s.: black dirt.

6-12 in b.s.: black dirt, diffuse oyster shell.

12-24 in b.s.: black/grey dirt, oyster shell, CMC valves.

Hole #5

0-8 in b.s.: black dirt.

8-24 in b.s.: grey dirt, oyster shell, CMC valves.

Hole #6

0-8 in b.s.: black dirt.

8-24 in b.s.: black dirt, oyster shell, CMC valves (the latter increasing with depth).

Hole #7

0-6 in b.s.: black dirt.

6-24 in b.s.: black/grey dirt, oyster shell, CMC valves (the latter increasing with depth).

Hole #8

0-8 in b.s.: black dirt.

8-24 in b.s.: black/grey dirt, oyster shell, CMC valves (the latter increasing with depth).

Hole #9

0-6 in b.s.: black dirt.

6-17 in b.s.: black dirt, oyster shell, CMC valves.

17-24 in b.s.: black/grey dirt grading into muck, oyster shell, CMC valves.

Appendix 2. Stratigraphic descriptions, northeastern edge of midden, Bridge B, West Ramp.
Strata are based on material removed from postholes. CMC = Carolina marsh clam.

Hole #10

0-6 in b.s.: black dirt.

6-24 in b.s.: black dirt, oyster shell, CMC valves.

Hole #11

0-6 in b.s.: black dirt.

6-24 in b.s.: black/grey dirt, oyster shell, CMC valves.

Hole #12

0-12 in b.s.: black dirt and oyster shell.

12-23 in b.s.: black dirt, oyster shell, CMC valves.

23-24 in b.s.: black/grey sandy muck.

Hole #13 (same as Hole #12).

Hole #14

0-24 in b.s.: black dirt, oyster shell, a few CMC valves.

23-24 in b.s.: dark dense sand.

Hole #15

0-15 in b.s.: black dirt and oyster shell.

15-24 in b.s.: dark dense sand (old levee bank?).

Hole #16 (same as Hole #15).

Hole #17

0-12 in b.s.: black sandy dirt and oyster shell.

12-18 in b.s.: black sandy dirt, oyster shell, CMC valves.

18-24 in b.s.: black/grey sand (old levee bank?).

Hole #18

0-8 in b.s.: black sandy dirt, diffuse oyster shell.

8-18 in b.s.: black sandy dirt, oyster shell.

18-24 in b.s.: black sandy dirt (old levee bank?), some oyster and CMC valves.

Hole #19

0-8 in b.s.: black sandy dirt.

8-18 in b.s.: black sandy dirt, diffuse shell.

18-24 in b.s.: black sandy dirt.

Hole #20

0-10 in b.s.: black sandy dirt.

10-16 in b.s.: black sandy dirt, some oyster shell.

16-24 in b.s.: black sandy dirt, oyster, CMC valves (some with cemented sand adhering).

Hole #21

0-12 in b.s.: black sandy dirt, oyster shell.

12-22 in b.s.: black sandy dirt, oyster shell, CMC valves (some with cemented sand adhering).

22-24 in b.s.: grey/black sand.

Hole #22

0-21 in b.s.: black sandy dirt, sparse oyster shell.

21-24 in b.s.: black/grey sand, oyster shell, CMC valves (some with cemented sand adhering).

24 in b.s.: grey/black sand.

Hole #23, 18-20 in b.s.: CMC valves.

0-16 in b.s.: black sandy dirt, sparse oyster and CMC shell.

16-24 in b.s.: black sand, CMC valves (some with cemented sand adhering).

Hole #24

0-24 in b.s.: black sandy dirt, sparse oyster and CMC shell (some with cemented sand adhering).

Appendix 3. Collections from postholes at Bridge A, South Ramp. These consist of collected items and residual materials from which radiocarbon samples were removed. Depths are in inches below surface (in b.s.).

Hole #1, 0-9 in b.s.: 2 STP body sherds, 2 king's crown shells (fragmentary), 4 saltwater catfish elements (2 otoliths, 1 neurocranial fragment, 1 lateral spine), 1 mullet vertebra, 1 large bony fish premaxilla fragment, 1 bony fish vertebra; 9-24 in b.s.: 1 turtle longbone fragment (humerus or femur), residual Carolina marsh clam valves after removal of radiocarbon sample.

Hole #2, 15-24 in b.s.: unwashed limestone rocks and Carolina marsh clam valves.

Hole #3, 15-28 in b.s.: 1 robust left-handed whelk shell fragment (possible tool fragment, imported shell), 1 limestone fragment (flat), unwashed oyster and Carolina marsh clam valves.

Hole #4, 0-6 in b.s.: 1 STP body sherd, 1 surf clam valve (imported shell), 1 bony fish bone fragment (sheepshead operculum fragment?), 1 turtle carapace pleural fragment (terrapin?), 1 deer phalange; 15 in b.s.: 1 eroded limestone rock, 1 unidentified bone fragment (bony fish?).

Hole #5, 24 in b.s.: 2 STP body sherds, 1 limestone rock, 4 oyster valves, 22 Carolina marsh clam valves, 2 unidentified bone fragments.

Hole #6, 8-24 in b.s.: 1 sizeable hyperostosis of a jack (cleithrum, cf. crevalle jack), unwashed oyster valves and limestone rocks (Carolina marsh clam valves removed for washing and radiocarbon dating).

Hole #7, 0-6 in b.s.: 3 STP sherds (1 rim, 2 body), 1 small limestone rock, 1 small left-handed whelk shell (fragmentary, imported shell), 1 turtle carapace nuchal; 6-24 in b.s.: 1 STP body sherd (2 cross-mending fragments, fresh break), 1 alligator scute fragment.

Hole #8, 0-6 in b.s.: 1 quahog left valve fragment (large heavy valve, posterior portion, imported shell); 10 in b.s.: 1 scallop valve (cf. upper valve, imported shell); 24 in b.s.: 1 turtle bone fragment; Other: 1 moon snail shell, 1 bony fish rib fragment.

Hole #9, 6-17 in b.s.: small amount of dirt and shell fragments including 3 unwashed Carolina marsh clam valves (other Carolina marsh clam valves removed for washing and radiocarbon dating).

Appendix 4. Collections from postholes at Bridge B, West Ramp. These consist of collected items and residual materials from which radiocarbon samples were removed. Depths are in inches below surface (in b.s.). Nothing was collected from Holes #16, #21, #22, and #24.

Hole #10: 3 STP body sherds, 1 robust left-handed whelk shell fragment (apparent tool fragment with a portion of the outer lip intentionally ground smooth, imported shell), 1 mineralized fossil horse tooth, 1 tiny catfish otolith, 1 bony fish dorsal spine, 2 unidentified bone fragments; 6-24 in b.s.: residual Carolina marsh clam valves (some with cemented sand adhering) after removal of radiocarbon sample.

Hole #11 (all from 24 in b.s.): 2 STP body sherds, 1 bony fish hyperostosis, 1 alligator scute.

Hole #12: 7 tiny catfish otoliths, 7 bony fish vertebrae, 1 bony fish vertebra fragment, 1 bony fish hyperostosis, 1 bony fish spine, 1 catfish (Arridae) neurocranial fragment, 1 turtle shell fragment, 1 snake vertebra, and 4 unidentified bone fragments; 12-23 in b.s.: 1 moon snail shell with predator drill hole, oyster valve fragments, and residual Carolina marsh clam valves (some with cemented sand adhering) after removal of radiocarbon sample.

Hole #13, 12-23 in b.s.: unwashed Carolina marsh clam valves.

Hole #14: 3-4 in b.s.: 1 ponderous ark valve.

Hole #15: 1 chunk of fossil-bearing stone; 0-6 in b.s.: 1 ponderous ark valve fragment.

Hole #17: 1 STP sherd (body or possible rim), 1 robust left-handed whelk shell fragment (possible tool fragment, imported shell).

Hole #18, 18-24 in b.s.: 1 STP rim sherd (thick body wall, incurving rim, pointed or very slightly chamfered lip, four incised lines on interior surface of rim with two of them running parallel to the lip and two running diagonally, cross-mends with rim sherd from Hole #23), unwashed Carolina marsh clam valves, 1 turtle carapace peripheral, 1 longbone fragment.

Hole #19, 8-18 in b.s.: unwashed Carolina marsh clam valves, 1 stone crab claw fragment, 3 fragments of the distal end of a deer longbone.

Hole #20: 6 STP body sherds, 1 quahog valve fragment (utilized?), 2 bony fish opercula (2 small unidentified taxa), 2 bony fish vertebra (1 very large), 1 snake vertebra; 16-24 in b.s.: residual Carolina marsh clam valves (some with cemented sand) after removal of radiocarbon sample.

Hole #23, 18-20 in b.s.: 1 STP rim sherd (fairly thick body wall, incurving rim, pointed or very slightly chamfered lip, three incised lines on interior surface of rim with two running parallel to the lip and one running diagonally, cross-mends with rim sherd from Hole #18), 1 large black drum atlas vertebra, unwashed Carolina marsh clam valves.

INVOICE

TO: Tom Henry, Special Projects Foreman
Charlotte County Parks, Recreation, and Cultural Resources

DATE: December 9, 2008

FOR: Tippecanoe Environmental Park,
Archaeological project for installation of bridge ramps at No Name Creek Midden:
Field work, analysis, and report preparation

AMOUNT: \$1500.00

FROM: George M. Luer, Ph.D., Archaeologist
3222 Old Oak Drive
Sarasota, FL 34239



Luer's cellphone: 941-628-4412

08-12-10P01:10 RCVD

Appendix F

